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A comparison of traditional, online, and hybrid learning models in accounting and finance education: Student perceptions and academic outcomes

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ABSTRACT

This study investigates the learning preferences of undergraduate and postgraduate students in accounting and finance, focusing on the influence of academic level, nationality, and cultural background. A survey of 600 students from Algeria, Egypt, Palestine, and Oman revealed significant differences in learning approaches across these groups. The results show that postgraduate students tend to prefer digital tools and interactive methods, reflecting their greater familiarity with technology, while undergraduate students are more inclined toward traditional face-to-face learning. National and cultural factors were found to play an important role in shaping students' views on both traditional and digital learning methods. The findings are interpreted through the lenses of differentiated learning theory, blended learning, and the cultural theory of education. This study suggests that educational institutions should consider these diverse preferences when designing curricula, promoting the integration of both traditional and digital approaches. The potential of hybrid learning models to enhance academic performance and student satisfaction is highlighted, supporting the need for more personalized teaching strategies. Future research is recommended to explore regional and subject-specific differences, examine the effects of hybrid learning on student outcomes, and assess how instructors adapt to digital teaching tools.

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1. Introduction

The field of accounting and finance education has undergone significant transformations, particularly with the rapid integration of digital tools and online learning platforms. Traditionally, face-to-face instruction has been the foundation of teaching in these disciplines, emphasizing direct interaction between instructors and students, textbook-based learning, and in-class discussions (Basar et al., 2021). These conventional methods have been widely recognized for their ability to foster deep understanding through hands-on engagement, real-time feedback, and a structured learning environment. However, over the past decade, there has been a notable shift toward digital and remote learning, driven by technological advancements and the global push for digital transformation in education (Scagnoli et al., 2009).

The COVID-19 pandemic further accelerated this transition, forcing educational institutions worldwide to rapidly adopt online and hybrid learning models to ensure continuity in education (AlQashouti et al., 2024). In the context of accounting and finance, this shift raises critical questions about the effectiveness of remote and hybrid learning compared to traditional face-to-face instruction. While remote learning provides flexibility, it also presents unique challenges, particularly in a field that traditionally relies on direct interaction and hands-on problem-solving. Hybrid models, which blend elements of both traditional and digital learning, are emerging as a potential solution, offering a balance between flexibility and interactivity (Inusah and Debrah, 2021).

This study aims to assess the effectiveness of traditional face-to-face instruction, remote learning, and hybrid models in accounting and finance

education. Specifically, it will examine student perceptions, learning outcomes, and the impact of these different teaching approaches on academic performance (Chen and Jones, 2007). By doing so, the research seeks to highlight the advantages and challenges of each method, considering key factors such as student engagement, comprehension of complex concepts, and the development of practical skills essential for future careers in the field (Mistry et al., 2024). This research is particularly significant as it provides a deeper understanding of how various teaching methods, educational tools, and technological platforms influence the learning experience in accounting and finance. As educational institutions continue to refine their teaching strategies to align with modern technological advancements and evolving student needs, understanding the role of digital tools in enhancing learning experiences will help shape future educational policies and teaching practices (Ou, 2024). The main research problem examines how effective traditional face-to-face education is compared to remote and hybrid learning models in the field of accounting and finance. Although many studies have explored digital learning in general, there is still little research focused specifically on accounting and finance education. This study aims to address this gap by exploring how different types of learning environments affect student engagement, understanding of accounting concepts, and overall academic performance. This research is especially important due to the ongoing debate about the most effective teaching methods in accounting and finance. As education systems around the world continue to change, it is essential to understand how different teaching approaches affect student outcomes. This study will examine student perceptions, learning outcomes, and academic performance to offer useful insights into the advantages and disadvantages of traditional, remote, and hybrid learning models in accounting and finance. The results will help guide future teaching practices, making sure that accounting and finance education stays effective, up-to-date, and responsive to technological changes. In summary, the primary objective of this study is to evaluate the effectiveness of traditional face-to-face learning, remote learning, and hybrid models in accounting and finance education. The study will assess student perceptions of these approaches, examine their impact on learning outcomes, and analyze their influence on academic performance. By identifying the strengths and weaknesses of each method, the research aims to provide evidence-based recommendations for improving teaching practices in accounting and finance. The study has five key objectives:

- To compare student perceptions of traditional face-to-face, remote, and hybrid learning models in accounting and finance education.
- To evaluate the impact of different learning methods on students' understanding of accounting concepts and principles.
- To examine the relationship between learning method and academic performance in accounting and finance.
- To explore the role of digital tools and technology in enhancing the learning experience in accounting and finance.
- To assess the effectiveness of hybrid learning models in combining the benefits of traditional and digital learning approaches.

With the light of the above objectives, a few research questions have been developed; they include:

- How do students perceive the effectiveness of traditional face-to-face learning versus remote and hybrid learning models in accounting and finance?
- What is the impact of different learning methods on students' understanding of complex accounting concepts?
- How do traditional, remote, and hybrid learning models influence academic performance in accounting and finance?
- What role do digital tools and technology play in enhancing the learning experience in accounting and finance education?
- How do hybrid learning models compare to traditional and remote learning in terms of student engagement, satisfaction, and learning outcomes?

This article is structured as follows: Section 2 provides the literature review and hypothesis development. Section 3 outlines the methodology, detailing the study's adoption of a descriptive analysis approach. Section 4 presents the results of both descriptive and statistical analyses. Section 5 discusses, and the final section 6 concludes the article while exploring its implications.

2. Literature review and hypothesis development

Education, particularly in specialized subjects like accounting and finance, has been subject to continuous evolution, with a growing emphasis on the integration of digital tools, hybrid learning methods, and traditional educational approaches (Awashreh, 2024). As the availability of online resources and technological advancements increases, it is crucial to examine how these tools and teaching methods affect students' learning preferences and the overall effectiveness of the learning process (Abou-El-Sood, 2024). In addition, significant trends in the literature highlight the use of traditional teaching methods, hybrid learning, and digital platforms in accounting and finance education. Moreover, this research also considers how individual characteristics, such as nationality, may influence learning preferences, drawing from studies that utilize advanced statistical methods, such as ANOVA and Friedman's test, to analyze these dynamics (Li et al., 2023).

Traditional face-to-face teaching has long been the cornerstone of education, particularly in fields

like accounting and finance, which often involve complex problem-solving and technical concepts. Scholars have long debated the effectiveness of these traditional methods in comparison to more modern approaches. Research suggests that face-to-face learning fosters greater interaction and engagement between students and instructors, which is essential for understanding intricate accounting principles (Meade and Parthasarathy, 2024). Furthermore, traditional methods, including the use of boards and in-class activities, are perceived by some students as more effective for retaining knowledge and facilitating immediate feedback (Monteiro et al., 2021). However, the effectiveness of traditional learning methods may vary depending on the student's learning style. For instance, some students may prefer more independent learning that can be achieved through digital tools, leading to a shift in preference towards blended or hybrid learning environments (Kintu et al., 2017). In this regard, while traditional methods are still valued, they are not immune to criticism regarding their limited ability to engage all students equally, particularly when confronted with the growing diversity of learning preferences (Tai et al., 2024).

The adoption of hybrid learning, which combines both face-to-face instruction and online elements, has gained prominence in recent years. In hybrid learning environments, students have the flexibility to learn both in-class and through digital platforms, allowing for a more personalized learning experience. Studies show that hybrid learning environments are particularly beneficial in fields like accounting and finance, where students often need to balance theoretical knowledge with practical application (Mulenga and Shilongo, 2025). In fact, hybrid learning methods facilitate both flexibility and interaction, which are essential for understanding complex financial principles and the application of accounting rules. Recent studies have found that hybrid learning provides a more engaging and interactive learning environment compared to traditional methods (Hafeez and Akhter, 2021). Additionally, this combination of online and in-person instruction allows students to revisit lectures and access learning materials at their own pace, which enhances retention and understanding. The use of hybrid models has been linked to better performance in accounting and finance courses, particularly when students are provided with clear instructions and effective use of digital tools (Bastos et al., 2021). In line with this, the results from advanced statistical methods, including Friedman's test, confirm that hybrid learning methods significantly impact students' learning preferences and outcomes. Studies utilizing these methods have shown that hybrid learning significantly improves students' perceptions of their understanding of accounting principles (Sulaiman et al., 2021).

Digital platforms and tools, such as online learning management systems (LMS), video tutorials, and interactive software, are increasingly integral to accounting and finance education. The incorporation of digital platforms allows for greater interactivity and provides students with instant access to learning resources, which is a crucial aspect of contemporary educational practices (Bradley, 2021). Moreover, digital tools, such as accounting software, spreadsheets, and financial modeling programs, allow students to engage with real-world scenarios, enhancing both theoretical knowledge and practical skills (Boulianne, 2014; Marriott, 2004). Research has shown that the use of digital platforms improves learning outcomes in accounting and finance by offering students access to resources that facilitate the practical application of theoretical concepts. For example, digital accounting software enables students to practice bookkeeping, taxation, and financial analysis skills in a simulated environment, fostering a deeper understanding of these areas (Tettamanzi et al., 2023). Furthermore, the use of digital platforms also enhances students' ability to work independently and develop problem-solving skills (Haleem et al., 2022).

The integration of digital tools has also led to more efficient learning, as students can review materials at their own pace and access supplementary resources (Haleem et al., 2022). In this regard, digital platforms have been linked to improvements in learning speed and knowledge retention, particularly in courses like accounting, where concepts need to be revisited multiple times to fully grasp the material. Furthermore, Tukey's estimation and Friedman's test, which assess the effectiveness of no additivity in educational models, highlight how students perceive the integration of digital tools in accounting education. These methods suggest that when students use digital tools in conjunction with traditional learning methods, there is a significant improvement in both their understanding and engagement.

Nationality is another important factor influencing students' learning preferences. Cultural backgrounds, societal norms, and educational systems can all impact how students engage with different teaching methods. Studies have shown that students from different countries may have varying preferences for traditional versus digital learning methods (Abacioglu et al., 2023). For instance, students from countries with strong traditions of face-to-face learning may have a greater preference for traditional methods, whereas students from countries with a higher prevalence of digital education may show a stronger preference for online learning platforms (Barrot et al., 2021).

The results of studies using statistical methods like ANOVA and Friedman's test also reveal significant differences in how students from different nationalities respond to various learning methods. In particular, nationality influences how students perceive the effectiveness of hybrid and digital learning platforms (Almusharraf and Khahro, 2020). Therefore, understanding these cultural and national differences is essential for educators who aim to create more inclusive and effective learning environments, particularly in international settings

where students from diverse backgrounds are involved (Markey et al., 2023).

The shift towards hybrid learning and the integration of digital tools in accounting and finance education have reshaped the landscape of higher education in these fields. While traditional methods continue to play an important role, the evidence suggests that hybrid learning and digital platforms offer significant advantages, including increased flexibility, greater interactivity, and more personalized learning experiences (Alenezi et al., 2023). In addition, the impact of nationality on learning preferences highlights the importance of understanding cultural factors when designing educational programs. Future research should continue to explore the specific factors that influence students' preferences for various teaching methods and examine how hybrid and digital learning models can be further optimized for diverse student populations (Manikutty et al., 2007). Ultimately, the continuous evolution of technology presents both challenges and opportunities for educators, who must remain adaptable to provide students with the most effective and engaging learning experiences possible (Eden et al., 2024).

Based on the text, here are the Hypotheses:

- Students will perceive traditional face-to-face learning methods as more effective than remote and hybrid learning models in accounting and finance education.
- Remote learning will be perceived as more effective than traditional face-to-face learning for enhancing students' ability to learn accounting and finance concepts.
- Hybrid learning models will result in better academic performance in accounting and finance compared to both traditional and remote learning methods.
- Digital tools and technological platforms will significantly enhance students' understanding and application of accounting principles.
- Students who engage in hybrid learning will report higher levels of satisfaction and motivation compared to those who engage solely in traditional or remote learning.

By addressing these research hypotheses, this study provides an understanding of how different teaching methods influence the learning experience in accounting and finance. The findings will offer actionable insights for educators, policymakers, and institutions looking to enhance the quality and effectiveness of accounting and finance education in the digital age.

2.1. Theoretical framework

The theoretical framework of this study integrates two key theories: Cognitive Load Theory and Cultural Dimensions Theory. Cognitive Load Theory focuses on how learners process information and manage cognitive effort, emphasizing the role of digital tools in alleviating cognitive overload (Sweller, 2020). These tools enable students to review learning materials at their own pace, thus enhancing their comprehension and retention. On the other hand, Cultural Dimensions Theory posits that nationality and cultural background significantly influence learning preferences. Recognizing these cultural differences helps explain why some students are more inclined to traditional face-to-face learning, while others prefer digital or hybrid methods (Sweller, 2020). By combining these two theories, this study offers a comprehensive framework for exploring how various educational approaches impact students' engagement, performance, and satisfaction, specifically in the context of accounting and finance education.

3. Methodology

The study adopted a descriptive analysis system with a quantitative approach (Sheard, 2018), targeting current undergraduate and postgraduate students in finance and accounting from four countries: Algeria, Egypt, Palestine, and Oman. The methodology aimed to explore the students' preferences and perspectives on hybrid learning in the context of their academic disciplines.

3.1. Study design

This research employed a cross-sectional survey design, which is well-suited for collecting data at a single point in time to examine participants' opinions and preferences. Although this design limits the ability to analyze changes over time, it provides valuable insights into the current state of learning preferences among the target population.

3.2. Sampling and participant selection

The study included 600 respondents from Algeria, Egypt, Palestine, and Oman, chosen based on the feasibility of data collection and the researchers' access to student populations in these regions. Algeria accounted for the largest share of participants, while Egypt, Palestine, and Oman contributed smaller but significant portions of the sample. The participants were students pursuing undergraduate and postgraduate degrees in accounting and finance, with both male and female students represented. The sample encompassed a diverse range of age groups and academic levels, ensuring a comprehensive perspective on the research topic. Table 1 presents the demographic factors for participants' profiles.

3.3. Survey instrument

The survey was specifically developed for this study and consisted of five sections. The first section, Demographics, captured participant profiles, including gender, academic level

(undergraduate/postgraduate), and country. The second section, Learning Preferences, focused on participants' preferences for hybrid learning compared to traditional and online-only learning models. The third section, Cultural Influence, assessed the role of cultural factors in shaping learning preferences. The fourth section, Challenges of Hybrid Learning, explored perceived barriers to adopting hybrid learning models. Finally, the fifth section, Open-Ended Feedback, allowed participants to share additional thoughts or recommendations. Most questions were measured on a 5-point Likert scale (1=Strongly Disagree to 5=Strongly Agree), with one item using a Yes/No format for binary responses.

3.4. Data collection

The survey was distributed through multiple channels to maximize participation. Online links were shared with field researchers in the selected countries, ensuring access across different regions. Additionally, emails were sent to targeted student groups within universities, further broadening the reach. To enhance accessibility, field researchers also shared the survey link through WhatsApp groups and university social media, ensuring that it reached students through a variety of communication platforms.

3.5. Participants and consent

Participants were informed about the purpose of the study and assured that their responses would remain confidential. No private data, such as names, phone numbers, or email addresses, was collected. Additionally, participants were made aware that their participation was voluntary and that they could withdraw from the study at any time. The study adhered to ethical standards by providing an informed consent statement, ensuring participants understood the study's purpose and their rights. Responses were anonymized to maintain confidentiality, and data collection and analysis were conducted in line with ethical guidelines to protect participants' privacy.

3.6. Reliability and validity

The survey instrument underwent a pilot test to evaluate its reliability and clarity. The findings from this test led to minor revisions aimed at improving question phrasing and survey flow. However, the study did not provide details on cultural measurement validity or the reliability metrics of the final instrument, which may be considered a limitation. Participants in the study included male and female students pursuing undergraduate and postgraduate degrees in finance and accounting. The sample comprised students from Algeria, Egypt, Palestine, and Oman, offering a multicultural perspective on hybrid learning preferences.

3.7. Study limitation

For study limitations, the study focuses on finance and accounting students, limiting its generalizability to other disciplines. Additionally, the cross-sectional design further prevents analysis of changes over time. Despite these limitations, the methodology remains structured and systematic in addressing the research objectives.

Table 1: Demographic factors for participants' profiles

Category	Subcategory	Percent (%)
Country	Algeria	69.8
	Egypt	15.2
	Palestine	11.3
	Oman	3.8
	Total	100.0
Gender	Male	42.2
	Female	57.8
	Total	100.0
Type of university	Government	85.0
	Private	15.0
	Total	100.0
Education level	Undergraduate	44.4
	Postgraduate	55.6
	Total	100.0
Taken online accounting/finance courses	Yes	27.6
	No	72.4
	Total	100.0
Years of experience in accounting/finance	1–2 years	40.4
	3–4 years	28.8
	5+ years	30.7
	Total	100.0

3.8. Analysis framework

The authors have developed an analytical framework to evaluate traditional, digital, and hybrid learning preferences in accounting education (Fig. 1). The framework diagram illustrates the key analytical components of this evaluation, categorizing the analysis into four main areas:

- Learning effectiveness: Cognitive gains, skill development, and performance outcomes.
- Student preferences and engagement: Preferences for traditional vs. digital learning, engagement levels, and motivational factors.
- Demographic and contextual analysis: Differences based on gender, educational level, and institutional/cultural influences.
- Technological integration: Adoption of digital tools, learning speed/efficiency, and the impact of hybrid learning models.

This structured approach provides a comprehensive framework for evaluating the effectiveness and feasibility of different learning modalities in accounting education.

4. Results

As outlined in the methodology, this section presents the findings from both descriptive and statistical analyses. The descriptive findings highlight key trends and patterns, providing a summary of the main variables. The statistical analysis further explores the relationships between

variables, testing the hypotheses and offering deeper insights into correlations and patterns. Together, these findings provide a comprehensive basis for further interpretation and discussion.

4.1. Descriptive results

Table 2 presents the preferred learning modes for accounting/finance education. The majority of respondents (47.1%) favor traditional face-to-face learning, followed by online learning (48%). When asked about traditional face-to-face classes, 48.8% agreed that they help them better understand accounting principles, with 36% strongly agreeing. Similarly, 54.1% agreed that using the board and markers enhances their learning experience. Regarding direct interactions with teachers, 48.6% agreed that it improves their understanding of accounting concepts, while 45.2% felt that using textbooks and written materials effectively supports their learning.

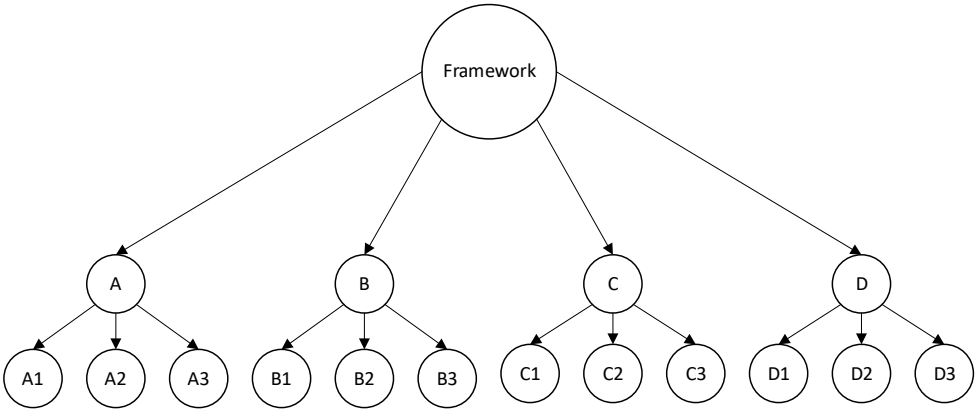

Fig. 1: Framework diagram illustrating the key analytical components for evaluating learning preferences in accounting education

Table 2: Descriptive analysis A

Favorite learning modes		Best mode for learning accounting/finance	
Mode	Percent %	Mode	Percent %
Face to face	47.1	Face to face	13.8
Hygiene	48.1	Hygiene	71.8
Online	4.8	Online	14.4
Total	100	Total	100.0
Traditional face-to-face classes in accounting/finance help me understand accounting principles better		**Using the board and markers during accounting/finance lessons enhances my learning experience**	
Answer	**Percent %**	**Answer**	**Percent %**
Strongly disagree	2.0	Strongly disagree	1.7
Disagree	4.2	Disagree	6.5
Neutral	9.0	Neutral	15.4
Agree	48.8	Agree	54.1
Strongly agree	36.0	Strongly agree	22.3
Total	100.0	Total	100.0
Direct interactions with teachers improve my understanding of accounting concepts		**Using textbooks and written materials effectively supports my learning**	
Answer	**Percent %**	**Answer**	**Percent %**
Strongly disagree	1.2	Strongly disagree	1.0
Disagree	4.4	Disagree	1.5
Neutral	13.8	Neutral	4.9
Agree	48.7	Agree	47.3
Strongly agree	31.9	Strongly agree	45.3
Total	100.0	Total	100.0

Table 3 presents descriptive analysis results regarding various teaching and learning techniques in accounting and finance. The data show that students generally find classroom learning more engaging than courses focused solely on techniques like board work. A majority of respondents agree that such methods require a deep understanding of complex accounting topics. When it comes to digital tools, most students report that computerized calculators and accounting software significantly improve their learning efficiency. Additionally, digital accounting tools such as spreadsheets and financial software are seen to enhance problem-solving skills, with many agreeing that these tools make understanding accounting concepts easier. The results also indicate that hybrid learning (combining in-person and digital methods) is considered more effective for teaching accounting/finance than traditional methods, although some students still favor traditional approaches.

Table 4 presents responses on the effectiveness of digital tools and traditional teaching methods in accounting/finance education. Most students agree that providing resources like videos and tutorials makes learning easier, and face-to-face interaction is essential for understanding complex accounting topics. A significant number of respondents believe that computerized tools better prepare them for real-world tasks, although some feel that traditional methods can be replaced by digital platforms. While traditional teaching methods are viewed as limiting focus, many students are more motivated to study

when advanced technological tools are incorporated. Combining traditional methods with digital tools is seen as beneficial for improving exam performance and academic results.

Table 3: Descriptive analysis B

Teaching accounting/finance is more exciting in the classroom environment than in courses		Techniques (such as working on the board) require a full understanding of complex accounting topics	
Answer	Percent %	Answer	Percent %
Strongly disagree	1.7	Strongly disagree	2.0
Disagree	6.5	Disagree	6.0
Neutral	19.8	Neutral	17.1
Agree	47.8	Agree	48.1
Strongly agree	24.2	Strongly agree	26.8
Total	100.0	Total	100.0
Using a computerized calculator and accounting software helps me learn accounting/finance more efficiently		**Platforms and tools 3 make it easier for me to understand accounting concepts**	
Answer	**Percent %**	**Answer**	**Percent %**
Strongly disagree	1.9	Strongly disagree	1.4
Disagree	4.8	Disagree	9.4
Neutral	13.3	Neutral	23.7
Agree	51.9	Agree	48.6
Strongly agree	28.2	Strongly agree	16.9
Total	100 %	Total	100.0
Digital accounting tools, such as spreadsheets and financial software, improve my problem-solving skills		**Better use of technological tools to solve accounting problems instead of relying on manual calculations**	
Answer	**Percent %**	**Answer**	**Percent %**
Strongly disagree	0.9	Strongly disagree	2.9
Disagree	6.7	Disagree	10.9
Neutral	15.4	Neutral	20.0
Agree	54.9	Agree	42.3
Strongly agree	22.2	Strongly agree	23.9
Total	100 %	Total	100.0
Hybrid learning (combination of in-person and 3-day classes) is more effective in teaching accounting/finance		**I can learn accounting/finance faster using digital platforms and software than traditional methods**	
Answer	**Percent %**	**Answer**	**Percent %**
Strongly disagree	2.0	Strongly disagree	4.4
Disagree	9.0	Disagree	22.9
Neutral	18.9	Neutral	24.4
Agree	41.8	Agree	34.0
Strongly agree	28.2	Strongly agree	14.3
Total	100.0	Total	100.0

Table 4: Descriptive analysis C

Providing resources 3 (videos, tutorials) makes accounting/finance easier to understand		Face-to-face interaction is crucial when learning complex accounting topics	
Answer	Percent %	Answer	Percent %
Strongly disagree	1.2	Strongly disagree	1.5
Disagree	4.9	Disagree	2.0
Neutral	13.3	Neutral	10.1
Agree	54.6	Agree	47.8
Strongly agree	25.9	Strongly agree	38.6
Total	100.0	Total	100.0
Using computerized accounting tools better prepares me for real-world accounting tasks		**I believe that traditional methods, such as working on the board, can be replaced by digital platforms in teaching accounting/finance**	
Answer	**Percent %**	**Answer**	**Percent %**
Strongly disagree	1.5	Strongly disagree	4.4
Disagree	4.6	Disagree	18.9
Neutral	23.4	Neutral	27.8
Agree	53.9	Agree	36.5
Strongly agree	16.6	Strongly agree	12.3
Total	100.0	Total	100.0
Using traditional teaching methods (such as writing on the board) limits my ability to focus on accounting concepts		**I feel more motivated to study accounting/finance when advanced technological tools are integrated into the lessons**	
Answer	**Percent %**	**Answer**	**Percent**
Strongly disagree	10.1	Strongly disagree	0.9
Disagree	29.0	Disagree	3.2
Neutral	21.0	Neutral	15.0
Agree	27.6	Agree	53.1
Strongly agree	12.3	Strongly agree	27.8
Total	100%	Total	100.0
Combining traditional methods with digital tools helps me perform better on my accounting/finance exams		**I feel that my academic performance in accounting/finance will improve if more digital tools are used in teaching**	
Answer	**Percent**	**Answer**	**Percent**
Strongly disagree	1.4	Strongly disagree	1.4
Disagree	2.7	Disagree	5.3
Neutral	14.2	Neutral	16.6
Agree	52.9	Agree	46.9
Strongly agree	28.8	Strongly agree	29.9
Total	100.0	Total	100.0

4.2. Effective blended learning in accounting

Traditional face-to-face teaching in accounting and finance offers clear benefits for developing conceptual understanding, especially through direct interaction with instructors (mean = 4.34) and the use of blackboards and visual aids (mean = 3.89). Textbooks also play an important role in supporting effective learning (mean = 4.06). Although classroom settings are generally more engaging than online

courses (mean = 3.86), hybrid learning—which combines in-person sessions with digital tools—is considered slightly more effective overall (mean = 3.85).

Digital tools, such as accounting software and spreadsheets, contribute to greater learning efficiency (mean = 4.00), improve problem-solving abilities (mean = 3.91), and better prepare students for real-world tasks (mean = 4.05). Despite the benefits of digital tools, traditional methods like blackboard use (mean = 3.33) remain important for understanding complex topics. The use of technology also increases motivation (mean = 4.04), though over-reliance on traditional approaches (mean = 3.03) may reduce focus and hinder learning progress.

In summary, a blended learning model that integrates both traditional and digital methods is the most effective strategy for teaching accounting and finance, as it balances conceptual clarity, practical skill development, and student engagement.

4.3. Blended learning for accounting success

Face-to-face lessons in accounting and finance greatly improve my understanding of key principles, particularly through direct interaction with instructors, which helps clarify complex ideas. Traditional methods—such as using whiteboards, highlighters, textbooks, and written materials—make abstract concepts easier to understand and provide valuable support. Compared to online learning, classroom environments are often more engaging and stimulating.

However, digital tools such as accounting software and spreadsheets improve learning efficiency by supporting accurate problem-solving and simulating real-world scenarios. I find digital tools especially useful for solving problems more quickly and effectively than manual calculations. A hybrid learning model that combines in-person teaching with digital resources is the most effective approach for accounting and finance education. It provides strong foundational knowledge through face-to-face interaction while using technology to enhance practical skills.

Digital platforms also accelerate learning and offer additional resources, but in-person instruction remains important for complex topics that need personalized guidance. While digital tools improve outcomes, traditional methods like using a whiteboard remain essential for understanding difficult material and explaining complex theories. A balanced approach that integrates both traditional and digital methods results in the most effective learning experience.

The use of technology also increases motivation by making learning more interactive and engaging. However, relying too heavily on traditional methods may reduce focus on broader, more advanced concepts. In conclusion, combining traditional teaching techniques with digital tools improves my performance in accounting exams and deepens my understanding of accounting principles. This blended learning approach ensures I develop both strong foundational knowledge and the technical skills needed for practical, real-world applications.

4.4. Traditional vs digital learning

The data analysis reveals key insights into the preferences and effectiveness of traditional versus digital learning methods. Most participants favored traditional methods, such as face-to-face interactions and the use of whiteboards. High ratings for statements like "direct interaction with instructors enhances my understanding" (mean=4.34) and "using whiteboards and markers improves my learning experience" (mean=3.89) demonstrate that these methods are valued for simplifying complex topics and enhancing conceptual understanding. At the same time, digital tools such as spreadsheets and accounting software were recognized for enhancing efficiency, problem-solving skills (mean=3.91), and real-world task preparation (mean=4.05). These tools provide practical, hands-on learning experiences that traditional methods cannot match. Hybrid learning approaches, which combine traditional and digital methods, were also highly valued. The statement "combining traditional methods with digital tools improves my performance" received an average rating of 3.85, supporting the effectiveness of this balanced approach. Students appreciated the benefits of both methods: Face-to-face interaction for complex topics (mean=4.34) and digital tools for improving learning efficiency. The data also highlighted differences among the samples. Sample 1 (N=276) showed a strong preference for traditional methods (mean=4.36), while Sample 2 (N=282) favored integrating technology (mean=4.07). Sample 3 (N=28) demonstrated a more balanced preference for both approaches. Statistical analysis revealed standard deviations ranging from 0.6 to 1.2, indicating reasonable variation in responses. In short, students prefer face-to-face learning for complex concepts but also recognize the value of digital tools for efficiency and practical task preparation. Excessive reliance on technology alone may be less motivating, highlighting the importance of a balanced, hybrid approach to learning.

4.5. Balancing traditional and digital methods in accounting education

The data findings provide valuable insights into participants' preferences for accounting and finance education, specifically regarding the balance between traditional methods and digital tools. A significant majority of participants emphasized the importance of traditional, face-to-face lessons for enhancing their understanding of the subject. Direct interaction with instructors received a high mean score of 4.58, highlighting its crucial role in improving comprehension. The use of whiteboards and markers (mean=4.12) and textbooks

(mean=4.23) was also highly valued for reinforcing learning and consolidating theoretical knowledge. While traditional methods were preferred, participants acknowledged the significant role of digital tools in improving learning outcomes. Tools like calculators, accounting software, and spreadsheets were seen as enhancing efficiency (mean=3.91) and preparing students for real-world tasks (mean=4.07). The higher preference for technology over manual calculations (mean=4.30) indicates its value in tasks requiring speed and precision. Hybrid learning, which combines traditional and digital methods, was strongly supported, with participants rating it as more effective (mean=4.04). Resources such as videos and tutorials (mean=3.99) were appreciated for simplifying complex concepts, further reinforcing the value of blended learning. Despite the increasing integration of technology, face-to-face interaction remains essential for mastering complex topics (mean=4.33). The analysis also revealed differences across sample groups. Sample 1 (N=81) strongly favored traditional methods, particularly instructor interaction (mean=4.58). Sample 2 (N=421) adopted a more balanced approach, supporting both traditional and digital methods (mean for technology use: 4.07). Sample 3 (N=84) also favored a blend of both approaches. In short, while traditional methods are preferred for complex topics, students recognize the value of digital tools and hybrid learning. The data suggests that hybrid learning is the most effective strategy for enhancing learning efficiency, skill development, and understanding of accounting concepts, ultimately improving academic performance and preparing students for real-world tasks.

4.6. Traditional, digital, and hybrid learning

The analysis of participants' preferences regarding accounting and finance education reveals clear distinctions between traditional, remote, and hybrid learning methods. Participants strongly favored traditional face-to-face classes for grasping accounting principles, with a high mean score of 4.46. Direct interaction with instructors (mean=4.58) and the use of whiteboards (mean=4.12) were highly valued, with low standard deviations (0.497–0.852), indicating consistent appreciation for these traditional methods. Digital tools were acknowledged for improving problem-solving skills and preparing students for real-world tasks. Mean scores for digital tools ranged from 3.78 (traditional) to 4.00 (remote), with accounting software and spreadsheets being particularly efficient. Participants showed a preference for using technology to solve accounting problems (mean=3.73), emphasizing the role of digital tools in enhancing learning. Hybrid learning, which combines traditional and digital methods, received a mean score of 3.85, reflecting students' recognition of the value in integrating both approaches. While in-person sessions were favored for complex topics (mean=4.33), digital platforms contributed to learning efficiency, with a mean score of 3.31 for faster learning. The integration of technology into lessons boosted student motivation (mean=4.04) and academic performance (mean=4.05). Resources such as videos and tutorials (mean=3.99) helped in understanding complex concepts, and digital tools facilitated learning in remote settings (mean=3.73).

Preferences varied across sample groups: Sample 1 favored traditional methods, Sample 2 adopted a balanced approach between traditional and digital, and Sample 3 supported both methods equally. In conclusion, participants preferred traditional face-to-face classes for complex topics and direct interaction, but also recognized the benefits of digital tools for efficiency, problem-solving, and motivation. Hybrid learning, combining both approaches, was considered the most effective strategy for optimizing academic performance in accounting and finance education, meeting diverse learning needs, and ensuring successful outcomes.

4.7. Gender differences in learning

The analysis of demographic differences in learning preferences between male and female participants reveals significant variations, highlighting the influence of gender on accounting and finance education. One key finding is the significant difference in learning methods ($p=0.002$), suggesting that gender shapes how students engage with the material. Males and females also differ in their views on the effectiveness of traditional face-to-face lessons ($p=0.000$), with distinct opinions on how well this teaching method supports understanding accounting principles. Similarly, the use of whiteboards and markers shows a significant difference ($p=0.000$), indicating that the perceived usefulness of these tools varies by gender. The importance of direct interaction with instructors also shows a significant difference ($p=0.000$), with gender influencing how participants view the role of such interactions in understanding accounting concepts. Additionally, when comparing the speed of learning with digital platforms versus traditional methods, a p-value of 0.011 indicates differing opinions on the effectiveness of digital tools in enhancing learning speed. Opinions on whether traditional methods, such as whiteboards, can be replaced by digital platforms also reveal a significant difference ($p=0.018$), suggesting differing perspectives between males and females on technological integration in education. Lastly, the combination of traditional and digital methods received differing opinions from males and females ($p=0.033$), with gender influencing how these methods are perceived in terms of their academic effectiveness. In short, the significant differences in learning preferences between male and female participants highlight distinct approaches to accounting and finance education, particularly regarding traditional teaching methods and the integration of digital tools. These findings suggest

that gender plays a role in shaping students' perceptions and engagement with various teaching strategies. Further research could explore these differences to inform the development of tailored educational strategies that better address the unique needs of male and female students.

4.8. University-type learning preferences

The analysis compares the learning preferences of participants from government and private universities in accounting and finance. Using t-tests and Levene's Test, several significant differences were found in key areas. A notable finding is that students from government and private universities significantly differ in their perception of learning faster with digital platforms, with p-values of 0.001 and 0.000, respectively. Similarly, there is a strong difference in opinions on whether traditional methods, such as whiteboards, can be replaced by digital platforms (p=0.000 for both tests). Additionally, students from the two types of institutions differ in their views on how traditional methods may limit their focus on accounting concepts (p=0.000). A more nuanced difference was found in the perception of accounting software tools, with p-values of 0.065 (assuming equal variances) and 0.034 (assuming unequal variances). This suggests differing opinions on the effectiveness of these tools in preparing students for real-world tasks. No significant differences were found in other areas, indicating generally similar learning preferences across government and private university students in those aspects. In short, the study highlights key differences in how students from government and private universities view digital platforms, traditional teaching methods, and accounting software tools. These differences suggest that the type of university attended influences learning preferences in accounting and finance.

4.9. Undergraduate vs postgraduate preference

The independent samples t-test reveals significant differences between undergraduate and postgraduate students in their learning preferences for accounting/finance education. Postgraduate students value traditional face-to-face lessons more (p=0.050) and prefer direct interaction with teachers (p=0.007), which helps them understand accounting concepts better. They also find textbooks and written materials more helpful (p=0.000) and are more inclined to use digital tools like computerized calculators and accounting software (p=0.049). Postgraduates believe digital platforms help them learn faster (p=0.002) and agree that traditional methods, such as board work, can be replaced by digital tools (p=0.000). Additionally, they feel traditional methods limit focus on accounting concepts (p=0.000). No significant differences were found in the preferred learning method (p=0.390), the method of learning accounting/finance (p=0.404), or studying remotely (p=0.593). In summary, postgraduate students generally prefer digital, interactive, and efficient methods, while undergraduates favor traditional face-to-face teaching. These findings highlight the varying effectiveness of traditional versus digital methods in accounting/finance education.

4.10. Government vs private learning preferences

The independent samples test reveals significant differences between students in government and private universities regarding their learning preferences in accounting/finance education. A preference for online learning was found (p=0.032), indicating some students favor it over traditional methods. There was also a significant difference in preferred learning methods for accounting/finance (p=0.008), highlighting distinct preferences between the two groups. Students studying online rated traditional face-to-face lessons lower (p=0.025), suggesting a preference for other methods. No significant difference was found for board and markers usage (p=0.914), direct interaction with teachers (p=0.506), or textbooks and written materials (p=0.583), indicating similar effectiveness across both groups. Hybrid learning showed a significant difference (p=0.039), with one group finding it more effective. Learning faster using digital platforms also showed a significant difference (p=0.037), suggesting digital tools aid learning speed. A preference for digital platforms over traditional methods was found (p=0.008), and students believe digital tools enhance performance (p=0.047). Overall, these findings emphasize the growing role of digital tools, hybrid learning, and digital platforms in accounting/finance education, suggesting their integration could improve the learning experience.

4.11. Country/national differences in learning preferences

The study includes participants from four nationalities: Algeria, Egypt, Palestine, and Oman. ANOVA results reveal significant differences between these groups in their learning preferences for accounting and finance. Nationality appears to shape students' attitudes toward various learning approaches. For example, there is a significant difference in preferred learning styles (F=4.068, p=0.007), suggesting distinct preferences across nationalities. Similarly, opinions on the effectiveness of hybrid learning also differ (F=3.105, p=0.026). Additionally, a significant difference is observed regarding the use of digital platforms to learn faster (F=4.301, p=0.005) and whether traditional methods can be replaced by digital tools (F=4.574, p=0.004). The most pronounced difference is in the perception that traditional methods limit focus on accounting concepts (F=14.146, p=0.000). However, no significant differences were found for other items. Overall, these findings emphasize that nationality

influences learning preferences and highlight the importance of considering cultural and national contexts in educational strategies for accounting and finance.

5. Discussion

This study explored the impact of traditional, hybrid, and digital teaching methodologies on learning outcomes in accounting and finance education, guided by Cognitive Load Theory (CLT) and Cultural Dimensions Theory. The findings align with existing literature and provide insights into how teaching methods interact with cognitive processes and cultural backgrounds, shaping student learning experiences.

Traditional face-to-face instruction remains effective for many students, particularly when complex concepts require direct interaction and immediate feedback. This supports previous studies indicating that traditional methods reduce cognitive load in contexts where instructor support is essential (Sweller, 2020). However, traditional learning doesn't meet the needs of all students, particularly those who prefer flexibility and autonomy, as suggested by CLT. Additionally, in multicultural contexts, students from cultures with a strong tradition of face-to-face education, such as in some Arab and Western countries, favored traditional methods, reflecting the influence of cultural factors on learning preferences (Venkat et al., 2020).

The hybrid learning model, combining face-to-face and digital components, emerged as the most favored approach. Students appreciated its flexibility, which allowed them to engage with digital resources at their own pace while benefiting from in-person interaction. This supports research indicating that hybrid learning enhances engagement and academic performance in accounting and finance (Bastos et al., 2021). From a CLT perspective, hybrid learning alleviates cognitive overload by enabling students to pace their learning and revisit content, improving comprehension and retention. Cultural Dimensions Theory helps explain why hybrid learning was well-received across different cultural contexts, though preferences varied, with students from cultures accustomed to digital education showing a stronger preference for hybrid models (Abacioglu et al., 2023).

Digital tools, such as Learning Management Systems (LMS) and interactive software, proved effective in enhancing engagement and practical application. These tools support cognitive load management by allowing students to review materials at their own pace, improving retention and learning speed in complex subjects like accounting (Haleem et al., 2022). However, some students still preferred face-to-face interaction, indicating that digital tools cannot fully replace the need for real-time feedback, especially for complex subjects (Meade and Parthasarathy, 2024). This highlights the importance of considering cultural factors when implementing digital tools to ensure that all students feel comfortable and supported in their learning environment.

The study contributes to the growing body of literature on hybrid and digital learning models, emphasizing that hybrid learning, combining face-to-face interaction with digital flexibility, is the most effective model for enhancing academic performance and satisfaction (Tettamanzi et al., 2023). It underscores the need to adapt learning models to accommodate students' diverse cultural backgrounds, creating inclusive environments that support student success. Educators should refine hybrid learning models and integrate digital tools that reduce cognitive load while addressing the changing technological landscape and students' evolving needs.

Theoretical implications of this study highlight the significance of integrating CLT and Cultural Dimensions Theory to better understand how teaching methodologies impact students' cognitive load and cultural learning preferences. This dual-theory framework provides a more nuanced understanding of how educational strategies can be tailored to meet the diverse needs of students in globalized educational contexts.

6. Conclusion

This study provides a comprehensive analysis of learning preferences among undergraduate and postgraduate students in accounting and finance, revealing significant differences in their approach to education. Postgraduate students tend to favor digital and interactive learning methods, while undergraduate students prefer traditional face-to-face approaches. These findings emphasize the growing importance of integrating technology into education, particularly in accounting and finance, as postgraduate students increasingly rely on digital tools to enhance their learning experience. Additionally, the study highlights how national and cultural contexts shape learning preferences, suggesting the need for educational institutions to tailor curricula to students' cultural and regional backgrounds. A one-size-fits-all teaching approach may no longer be effective in today’s globalized educational environment.

The study also underscores the effectiveness of hybrid learning models, which combine traditional and digital methods, in meeting the diverse needs of students. Institutions that adopt these models are likely to see improved academic outcomes and greater student satisfaction. Furthermore, the increasing preference for digital platforms and tools signals that institutions should prioritize technology integration into their teaching strategies. While the study offers valuable insights, limitations such as sample size and the cross-sectional nature of the research must be considered. Future studies should expand the scope to include a broader range of disciplines, institutions, and countries, and incorporate longitudinal data to track changes in

learning preferences over time. This research contributes to a deeper understanding of how students engage with accounting/finance education and provides practical recommendations for institutions to adapt to the evolving educational landscape. By embracing digital tools, hybrid models, and considering cultural diversity in curriculum design, institutions can better prepare students for the modern workforce.

The study's findings also have societal implications for education. By adapting teaching methods to align with the digital preferences of students, especially in fields like accounting and finance, educational institutions can enhance learning outcomes. As students become more adept with technology, their skills will better align with the demands of a globally interconnected and technology-driven job market, ensuring they are prepared for modern industries. Additionally, understanding how national and cultural backgrounds influence learning preferences enables institutions to create more inclusive and equitable curricula. This personalized approach can bridge educational gaps and foster global cooperation in both academic and professional contexts.

Institutionally, the growing preference for hybrid learning models suggests that educational institutions should reevaluate their curricula to integrate both traditional and digital methods. Hybrid learning provides students with the flexibility to engage with both theoretical and practical aspects of their studies, improving their overall learning experience. Institutions should invest in digital resources such as learning management systems and accounting software to support both in-person and online learning environments. This investment will not only enhance academic performance but also ensure students are well-prepared for the digital demands of the workforce.

The findings from this study suggest that learning preferences are highly contextual and not universal. The differences observed based on nationality and educational level indicate that future studies should explore regional variations in learning preferences to offer more nuanced insights. Context-specific findings can better inform curriculum design, ensuring that institutions are attuned to the unique needs of their student populations. Moreover, the study underscores the importance of blended learning in enhancing student outcomes. Given the increasing reliance on digital platforms, future research should delve deeper into the effectiveness of blended learning models, not only in accounting and finance but across various academic disciplines. Longitudinal studies would be valuable in tracking how learning preferences evolve as technology continues to advance and pedagogical methods shift over time. To meet the evolving needs of students, institutions should adopt blended learning approaches that combine face-to-face and online formats, offering flexibility while maintaining traditional methods. Investing in digital tools and platforms, especially in fields like accounting and finance, is essential for practical knowledge application. Faculty training on integrating digital tools will enhance their ability to address students' diverse needs and improve learning outcomes. Additionally, curricula should consider cultural and national contexts to foster an inclusive learning environment that engages students from various backgrounds. While the study offers valuable insights, it has several limitations. The sample size and diversity may not fully represent the broader student population, as it focused on students from Algeria, Egypt, Palestine, and Oman, which may not be generalizable to other regions. The cross-sectional design limits tracking changes in preferences over time, and longitudinal studies would provide a dynamic view of evolving preferences. The study's focus on accounting and finance limits its applicability to other disciplines. Future research should include a broader range of regions, institutions, and disciplines, and explore how learning preferences evolve over time, especially in response to technological advances.

Future research should also examine hybrid learning's impact on academic performance, engagement, and skill acquisition, particularly in fields like accounting and finance. Studying faculty adaptation to digital learning can offer insights into how educators can be better supported in integrating technology. Investigating cultural factors' role in shaping learning preferences will also deepen our understanding of how to design curricula that are both effective and culturally responsive. In conclusion, the study highlights the importance of blending traditional and digital learning methods to cater to students' diverse needs. By considering students' cultural and educational backgrounds, institutions can create more inclusive and effective learning environments. Future research should focus on technological integration and its impact on learning outcomes, preparing students for the digital demands of the workforce.

Compliance with ethical standards

Ethical considerations

The study adhered to ethical guidelines for research involving human participants. All participants were informed about the purpose of the study and provided their voluntary consent before participation. No personally identifiable information was collected, and data were anonymized to ensure confidentiality. The research protocol was reviewed and deemed exempt from formal ethics committee approval due to the non-invasive nature of the survey and the anonymity of responses.

Conflict of interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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