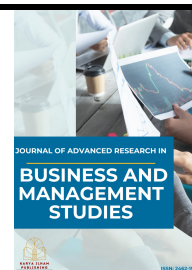




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# Embedding FinTech and Digital Innovation in Accounting Education: A Capability-Based Framework for Transformative Learning

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### ABSTRACT

Digital technologies are redefining accounting work and increasing demand for graduates who can use analytics, AI-related tools, and blockchain-aware processes with sound judgement. This study develops a capability-based framework for integrating FinTech and digital innovation into accounting education through transformative learning. The study used an exploratory qualitative design based on semi-structured interviews of 120 participants from four stakeholder groups and a curriculum-focused review of professional documents. The results point to four interrelated capability domains: digital, analytical and critical, ethical, and collaborative. Many existing programmes continue to be heavily procedural, lack real exposure to digital tools, and address data ethics or industry-linked problem solving in the round. Effective university reform requires this integration across four domains, curriculum, pedagogy, assessment and faculty development along with university-industry collaboration.

## 1. Introduction

The practice of accounting is being transformed by digitalisation, robots in the form of artificial intelligence, cloud platforms and blockchain-enabled verification processing systems, and data-intensive reporting systems. The increasing role of these technologies in recording, verifying, interpreting and communicating transactions means the modern accountant is required to integrate technical knowledge with digital fluency, judgement and automation outputs into their work. Earlier research on digital transformation in the accounting profession and more broadly highlights that technology is not simply an accelerator of current routines, it reshapes organisational processes, decision structures and expectations of what constitutes professional performance [4, 5]. A similar conclusion comes from the literature on blockchain in accounting which demonstrates how emerging systems impact assurance, transparency, and audibility that needs to be prepared with new forms of education instead of elementary software training [11].

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Student-centred frame deepens the urgency for curriculum reform. In a recent study of teaching accounting in the generative artificial intelligence age, students increasingly think of digital tools as part of normal academic and professional work but also continue to be concerned about overreliance, academic integrity, and what is an adequate level of understanding when produced by automated systems [1]. In contrast, the competency-based education agenda promoted by the accountancy profession portrays digital disruption as a way to rethink learning outcomes, assessments, and pathways into professional relevance [2]. To be read together, these contributions imply that the issue is not if technology should be present in accounting education, but rather how programmes can implement it and still keep deep learning, ethical awareness and professional judgement.

There is also literature telling us that digitalisation can bring tensions quite underplayed in celebratory narratives about innovation. Research on technostress and accountants' professional identity indicates that digital transformation can create anxiety, role ambiguity, and resistance to change when new systems do not come with the necessary pedagogical support, institutional resources or opportunities for reflective adaptation [3]. This is an important insight for matters of curriculum design, as it refocuses our attention from adoption of a technology (or even multiple technologies) per se to the human-seeking conditions in which adoption becomes educationally valuable. A programme might have artificial intelligence, analytics or blockchain content as part of it, but if students and educators are not equipped to interrogate such tools critically, to question their limitations and place them within broader professional responsibilities, the material would be for naught.

Recent synthesis work suggests rapid growth in this field but conceptual unevenness. A bibliometric analysis of accounting education in the digital era reveals increasing academic interest towards digital skills, educational technology, and curriculum overhaul but also suggests that relevant literature is scattered across different themes and frequently missing integrative conceptualizations [6]. This fragmentation is important because developments in financial technology, automation, data analytics, sustainability reporting and quality assurance are impacting accounting education at the same time. And when these streams are looked at in isolation, curriculum reform becomes ad hoc and reactive. This study therefore approaches the literature review not as separate strands, but a basis for establishing a cohesive framework capable of organising what capabilities should be developed and its significance.

Such integration is anchored well in theory, from a capability-based perspective. Developing the capability approach in outcome-based education argues that educational quality should not be simplified to content delivery, or narrow technical competence; rather, attention needs to be on what learners are really able to do, become and contribute in complex social settings [7]. Applied specifically to accounting education, it is such a valuable perspective because the digital economy requires more than mechanical competence. Whether graduates are expected to make sense of data, use judgment, work across functions and respond to ethical grayness. A capability lens thus reframes curriculum reform away from the question of which tools should be taught and towards a broader set of questions regarding which professional capabilities we want to expand through teaching, assessment, and authentic learning experiences.

Transformative learning scholarship further strengthens this theoretical position. Advances in transformative learning highlight the responsiveness of higher education to facilitate learners to challenge assumptions, transform frames of reference and develop more critically reflective forms of professional identity through dialogue and critical engagement [8]. It speaks directly to accountancy because, as digital systems create an irresistible aura of objectivity and certainty, this is highly relevant in accounting. In this context, transformative learning encompasses an additional

pedagogical dimension in the current debate, arguing for a curriculum change which should be based on critical reflection as well as a digital capability. In this way, technology is to be a site for inquiry, judgement and ethical reasoning, not the thing which is to replace them.

A second relevant strand of literature concerns digital literacy in relation to sustainability and ethical responsibility. Studies on the digital era in sustainability accounting and its education suggest a growing interrelation between digital literacy, adoption of artificial intelligence, and key programs [9] such as institutional reputation (accountancy working with significant others), social innovation (where business meets democracy) and the larger mission to serve college graduates 7. This finding broadens the debate beyond efficiency and employability. It is proposed that digital reform of accounting education must also include critical questions on transparency, privacy, bias, accountability and the impact on society of algorithmic decision making. So, the pedagogical challenge is to embed digital content into existing modules, in addition, technology-facilitated practice goes hand in hand with ethical reasoning and an appreciation of how digital systems impact on stakeholders, trust and public-interest obligations of accounting work.

FinTech-specific scholarship is similarly indicative of both opportunity and limitation. Studies that specifically consider the impact of FinTech on accounting education argue that intangible technologies such as digital payments, smart systems, analytics and platform-based financial services have become too central to professional life to be left peripheral in the curriculum [10]. Meanwhile, literature on blockchain and accounting shows that each of the different technology brings its own implications in terms of control, verification and information integrity meaning curriculum reform needs to extend beyond generic digital awareness [11]. These studies are useful because they establish the subject matter areas that students should be exposed to. But they are less explicit when it comes to how these topics can be adapted to a more holistic model of education that integrates technical material with judgement, ethics, collaboration and the ability to learn in new technological landscapes.

The regional and practice-oriented studies offer further justification for a fresher, more integrative model. Studies on the practical implementation of digital transformation through blockchain in accounting show that practice settings are now rapidly changing workflows and control environments and professional tasks [4]. Similarly, other work on management decision-making and accounting information systems in Jordanian organisations emphasises that digital systems affect not just organisational performance, but how information is used, the nature of user database transactions-products responsiveness strategies [14, 15]. Such studies are relevant because they remind us that curriculum reform is not some abstract issue of academic concern; there are tangible changes in how accounting work is organised and evaluated [16]. The vast majority of studies with a practical orientation tend to address organisational outcomes over curriculum architecture, pedagogical sequencing and capability development in higher education.

All in all, the literature reveals great strides are made but suffers from fragmentation within technological, pedagogical, ethical and institutional dimensions. Current literature on students attitudes towards digital tools [1], competence-based reform [2, 10], technostress in accounting and tensions of professional identity [3] consider how digital transformation will shape the future of accounting practice as well [4, 11], and address capability, transformative learning, and accreditation concerns that might arise for educators during this process. Nevertheless, a few research has integrated these strands into a single cohesive theory for accounting education. Hence, there is no integrated capability-based model connecting FinTech and process digitalisation with curriculum design, pedagogy and assessment as well as employability to-date within a single explanatory framework [17, 18, 19]. To this end, this paper seeks to establish the key capability domains that are needed in a digital accounting environment as well as emphasizing stakeholder evidence translated

into more meaningful curriculum implications. This study concludes by providing a sharper and consolidated contribution than the de-contextualized ones that are currently available, and instead introduces a framework of four domains that includes inextricably linked digital competencies with analytical & critical, ethical and collaborative capabilities to foster transformative learning towards labour-market relevance [6, 7, 8, 13].

## 2. Methodology

### 2.1 Research Design

Since the research problem relates to ambiguous meanings, expectations, and institutional practices that cannot be sufficiently described by numerical indicators, this study adopted an exploratory qualitative design. The design integrated semi-structured interviews with documentary review to identify alignment and misalignment between stakeholder perceptions, curricular requirements and professional standards. This is suitable when there are no competing paradigms, or you want to develop an interpretive framework based on a practice rather than testing known causal relationships [13].

### 2.2 Sampling Strategy and Participant Profile

Perspectives from the major constituencies informing accounting education, and its labour-market relevance, were sought via purposive maximum-variation sampling. Participants were chosen because they had first-hand experience in accounting practice, programme delivery, curriculum design or recruitment and supervision of accounting graduates. Final sample consisted of 120 participants evenly distributed across 4 groups, in order to ensure balanced representation among stakeholder categories. Table 1. Summarise sampling frame used in this study.

**Table 1**

Sample distribution across stakeholder groups

Stakeholder Group	Role in the Study	n
Financial managers	Managers in banks, FinTech-related functions, and private firms who supervise digital finance, reporting, or control processes	30
Practising accountants	Professional accountants involved in reporting, audit, tax, assurance, or analytics-enabled decision support	30
Accounting academics	Lecturers responsible for course delivery, assessment, and student capability development	30
Curriculum developers and academic leaders	Programme coordinators, heads of department, and curriculum committee members involved in programme revision and accreditation alignment	30
Total		120

The balance structure facilitated comparison across stakeholder groups while maintaining the interpretive richness typical of qualitative inquiry. It also addressed the reviewer concern that four groups were described in the original draft but no mention made of how participants were allocated between those groups.

### 2.3 Data Collection

Data were collected using semi-structured interviews that were either online or face-to-face. Each interview was structured to last between 25 – 30 minutes, and focused on three broad areas: (1) The digital transformation of accounting practice; (2) The adequacy of current accounting education; and (3) The institutional conditions necessary for constructive curriculum change. Additionally, course documentation, accrediting body guidance and professional reports were consulted to triangulate interview narratives with official expectations [2, 12].

**Table 2**

Core interview questions

Question Number	Question Text
1	To what extent is the integration of FinTech and digital innovation important for accounting education?
2	What gaps exist between current accounting education outcomes and the needs of the digital labour market?
3	How are artificial intelligence and blockchain reshaping accounting practice?
4	What challenges do educational institutions face when embedding FinTech tools into curricula?
5	How can a capability-based model enhance students' professional competence?
6	Do current assessment methods adequately reflect digital and analytical competence requirements?
7	What practical steps could strengthen partnerships between universities and the professional sector?

### 2.4 Data Analysis

Data from the interview transcripts and documentation were thematically analysed using an iterative coding process. The first step taken for data analysis was open coding, to recognize reoccurring concepts. Subsequently through axial coding, these codes were organized to assess the relationships between competence needs, pedagogical responses, and institutional constraints. Lastly, selective coding was used in order to tie the findings into one concentrated framework. In order to enhance credibility and minimize over-interpretation, peer discussion, repeated comparison of transcripts and triangulation with documentary sources were employed.

## 3. Results and Discussion

The result was a clear central contribution: a capability-based organizing framework encompassing four interrelated domains. The outline brings the earlier draft out of conceptual sprawl by centring all findings around a single question, what capabilities do account programmes need to deliberately foster (in order for them to respond meaningfully to digital transformation)? Table 3

connects the domains to evidence that emerged from interviews and its associated curriculum implication.

**Table 3**

Four-domain capability framework derived from stakeholder evidence

Capability Domain	Indicative Evidence from Interviews	Curriculum and Assessment Implication
Digital capability	Financial managers and practising accountants repeatedly described graduates as underprepared to use analytics tools, AI-supported workflows, blockchain-enabled verification, and digital platforms in routine work.	Embed applied digital content across courses, use labs and simulations, and assess tool use through authentic tasks rather than isolated demonstrations.
Analytical and critical capability	Stakeholders linked traditional rote-learning approaches with weak judgement, limited problem framing, and difficulty interpreting outputs for decision-making in complex business settings.	Use case-based, project-based, and scenario-driven assessments that require interpretation, reflection, and professional judgement rather than recall alone.
Ethical capability	Participants noted issues of privacy, transparency, cyber-risk, misuse of automated outputs, and algorithmic system bias. Faculty members also pointed to a lack of clear dos and don'ts for judging digital ethics.	Integrate ethics within digital content, introduce assessment rubrics for responsible technology use, and require students to justify choices involving data governance and accountability.
Collaborative capability	Weak university–industry collaboration, limited internships, and few co-developed learning activities were seen as obstacles to relevance and smoother graduate transition into practice.	Co-design selected modules with employers, expand work-integrated learning, and use interdisciplinary or industry-linked projects to strengthen workplace readiness.

### 3.1 Digital Capability and the Education–Practice Gap

The most unambiguous result was the continued gap between existing programmes and workplace technologies. Financial managers said graduates may know how to read accounting rules in theory, but are not well equipped to deal with analytics, automation, cloud-system controls or blockchain. Practising accountants also emphasised the mismatch between traditional classroom exercises and the digital reporting/assurance environment and its pace. Finding is consistent with recent research demonstrating digital innovation changes the content and context of accounting work, thus leading to calls for more significant curricular change [4, 5, 11].

### 3.2 Analytical and Critical Capability for Transformative Learning

Participants did not advocate only for technology training. Instead they consistently connected digital competence to judgement, interpretation and reflective problem solving. In their estimation, graduates should be able to query outputs and challenge assumptions, and turn digital information into decisions. This is where transformative learning becomes key: students need to go from procedural adherence to meaning-making and professional reasoning. The finding is consistent with

capability-oriented and transformative learning scholarship, which emphasizes agency, reflection, and applied judgement as key outcomes for (higher) education [7, 8, 13].

### *3.3 Ethical Capability in Data-Driven Accounting Environments*

Ethics became a distinct rather than secondary aspect of curriculum reform. Stakeholders expressed concerns about data privacy, transparency, cyber-risk due to the use of algorithmic systems, misconduct with automated outputs and bias in the algorithm. Faculty members also pointed out that, even in places where ethics is mentioned in programme documentation, assessment practices often do not reflect the ethical dilemmas entailed by digital tools. This indicates that ethical capability needs to be contextually embedded within substantive learning tasks rather than as a disengaged compliance topic [3, 9, 12].

### *3.4 Collaborative Capability and Institutional Alignment*

The fourth domain was collaboration across institutional boundaries. Interview subjects reported weak ties to industry partners, too little experience with real digital workflows, and feeble feedback loops between employers and curriculum committees. It follows that the development of capabilities requires not just a programmatic governing institution, but governing agreements that keep programmes responsive. Thus, in this respect, the proposed framework situates collaboration as both an institutional design principle and graduate attribute. This view is consistent with both the accreditation and labour-market literature, which highlights evidence informed improvement, stakeholder engagement and curriculum alignment to changing assumptions of professional expectations [2, 12, 14, 15].

## **4. Conclusions**

The purpose of this study was to refine and sharpen the manuscript's core contribution framed by one coherent proposition, that is, accounting education needs to embed FinTech and digital innovation through a four-domain capability architecture of digital, analytical & critical, ethical and collaborative capabilities. The proof is stacked up that these domains are interconnected. Exposure to and use of digital tools without critical judgement turns out superficial competence; analytical training, unfettered by ethics, leads also to irresponsible use of technology; both remain shallow if institutions do not build more robust industry-linked learning spaces. This paper also addresses reviewer concerns with clearer sampling, a narrower scope, sharper language, and explicit citation of stakeholder evidence in support of each proposed domain. Crucially, the framework accepts trade-offs and unintended consequences. Potential pitfalls of such efforts include large costs for software, infrastructure, and faculty development; heavy-handed or rushed changes in the curriculum that levels differences between more well-endowed institutions and those with less resources; and ill-formed reform strategies may incentivize tool dependence versus professional reasoning. That said, the study contends that the framework has value as a tool for institutions to better integrate curriculum content with pedagogy, assessment and partnership strategy. Future studies are needed to apply the framework in specific programmes and assess its effect on student development of capabilities for transition into digitally enabled accounting careers post-graduation.

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