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Generative Artificial Intelligence in Commerce Education: A Conceptual Framework for Future-Ready Learning

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Abstract

The rapid emergence of Generative Artificial Intelligence (GenAI) is reshaping higher education by altering how knowledge is accessed, produced, discussed and assessed. Its significance is particularly strong for Commerce education, which spans accounting, finance, taxation, marketing, human resource management, entrepreneurship and business analytics domains increasingly influenced by automation and AI-assisted decision-making. This conceptual paper examines the opportunities and challenges associated with GenAI in Commerce education and proposes an integrated framework for future-ready learning. The study is descriptive and conceptual and is based on a thematic synthesis of peer-reviewed literature, systematic reviews and authoritative policy guidance. The analysis identifies major opportunities in personalised learning, formative feedback, case-based pedagogy, simulation, communication practice, research support and career preparation. It also identifies substantial risks involving fabricated or inaccurate outputs, academic integrity, overdependence, privacy, bias, unequal access and weakened validity of traditional assessment. In response, the paper proposes the GAI–FRC Framework, comprising six interconnected enabling dimensions: AI literacy, curriculum integration, personalised and experiential learning, faculty readiness, ethical governance and assessment redesign. These dimensions operate through learner practices of questioning, verification, interpretation, application, critique and transparent disclosure to support digital competence, critical thinking, analytical ability, creativity, ethical awareness, adaptability and employability readiness. The paper argues that GenAI should be positioned as a cognitive and pedagogical partner rather than a substitute for disciplinary knowledge, teacher judgement or student intellectual effort. The framework offers a discipline-sensitive basis for institutions seeking responsible and purposeful integration of GenAI into Commerce education.

***Keywords**: Generative Artificial Intelligence, Commerce Education, Future-Ready Learning, AI Literacy, Higher Education, Digital Transformation, Academic Integrity.*

Introduction

The digital transformation of higher education has entered a new phase with the rapid diffusion of Generative Artificial Intelligence (GenAI). Unlike conventional educational technologies that mainly store, retrieve or transmit information, GenAI systems can generate text, explanations, examples, summaries, images, code and other outputs in response to natural-language prompts. This capability has lowered the technical barrier to interacting with advanced AI and has brought questions of AI use directly into classrooms, assignments, assessment and academic policy.

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UNESCO's guidance on GenAI in education and research emphasises a human-centred approach and calls attention to privacy, ethical validation, age-appropriate use, inclusion and the need for institutional capacity. The significance of this position is that educational value cannot be inferred merely from technological capability. Institutions must decide what forms of AI use serve learning goals, what forms undermine them and what safeguards are necessary.

Commerce education is a particularly important context for this debate. Commerce programmes integrate accounting, finance, banking, taxation, marketing, human resource management, entrepreneurship, business law, research methods and increasingly business analytics. These areas combine conceptual understanding, numerical reasoning, interpretation of rules and standards, professional communication and context-sensitive judgement. Consequently, a fluent AI-generated answer may still be educationally or professionally unsafe if it is outdated, fabricated, insufficiently contextualised or accepted without verification.

At the same time, rejecting GenAI entirely would overlook its potential to support explanation, practice, ideation, feedback and simulation. Recent higher-education reviews describe a fast-growing field with opportunities for personalised support and pedagogical innovation, alongside concerns about accuracy, integrity and governance. Evidence is also beginning to emerge in accounting education, where students report perceived learning benefits, while assessment-focused studies show that GenAI performance varies across levels of cognitive demand.

The central issue is therefore not whether Commerce education should simply accept or prohibit GenAI. The more useful question is how institutions can integrate it in ways that strengthen disciplinary understanding, critical judgement, ethical conduct and future readiness. This paper addresses that question through a conceptual synthesis and proposes the GAI-FRC Framework for responsible GenAI integration in Commerce education.

Conceptual Background

Generative AI refers broadly to AI systems capable of producing new content by learning statistical patterns from large bodies of data. In educational settings, the most visible applications are conversational systems that generate natural-language responses, but the category also includes systems that create images, audio, video and code. The educational implications arise from their capacity to provide immediate responses, adapt explanations, simulate dialogue and generate multiple representations of a problem.

Three conceptual distinctions are important. First, output generation is not equivalent to truth. A system can produce a persuasive answer without reliable grounding. Second, convenience is not equivalent to learning. A student may complete a task faster while engaging less deeply with the underlying concepts. Third, AI literacy is broader than prompt writing. It includes understanding limitations, verifying claims, protecting data, recognising bias, documenting use and knowing when human expertise or authoritative sources must prevail.

For Commerce education, these distinctions are central because many tasks involve current regulations, professional standards and consequential decisions. A generated explanation of taxation, securities regulation or accounting treatment should be checked against authoritative and current sources. Likewise, a generated marketing plan or HR policy should be evaluated for context, feasibility, fairness and legal implications. Thus, the appropriate educational objective is not passive consumption of AI output but disciplined interaction with it.

Review of Literature

Following literatures are reviewed for the purpose of study

- **UNESCO's 2023** guidance and its broader AI-in-education work emphasise human agency, inclusion, privacy and ethical governance. UNESCO's competency-oriented approach also strengthens the case for treating AI capability as a combination of knowledge, skills and values rather than mere tool use.
- **Batista et al. (2024)** reviewed 37 articles published during 2023–2024 and concluded that GenAI adoption in higher education is expanding across teaching, learning and research while raising persistent concerns. Their review illustrates both the speed of adoption and the need for clearer educational strategies.

- Furze et al. (2024) presented a pilot implementation of the AI Assessment Scale, which uses graduated levels of permitted AI involvement. The study illustrates an alternative to a simple ban-versus-permission approach and supports explicit assessment design around intended human and AI contributions.
- **Belkina et al. (2025)** systematically examined empirical cases of GenAI implementation in higher education. Their work is important because it moves discussion from broad speculation toward actual teaching and learning practices and highlights the need for actionable, context-sensitive implementation.
- **Wu et al. (2025)** reviewed responses, attitudes and utilisation behaviours regarding GenAI in higher-education classrooms. The review points to opportunities for personalised learning and assessment while showing that adoption depends on how students and teachers perceive and use the technology.
- **Wang et al. (2025)** reviewed applications of generative AI in higher-education classrooms and analysed disciplinary uses and levels of integration. This reinforces the argument that educational effects cannot be treated as uniform across subjects; discipline and task design matter.
- **Zhou et al. (2025**) reported that students perceived benefits such as reduced repetitive work, knowledge acquisition and time savings, while perceptions varied with usage patterns and academic characteristics. This provides direct support for examining GenAI within Commerce-related disciplines rather than relying only on general higher-education findings.
- **Tharapos et al. (2025)** investigated GenAI in accounting assessment using revised Bloom's taxonomy and found stronger utility in lower- to mid-order tasks than in higher-order learning contexts. This finding is particularly relevant to assessment design: if a tool can perform routine academic tasks readily, educators must create tasks that make reasoning, verification, contextual judgement and reflection visible.

The literature indicates a convergence around several themes: potential for personalisation and support; the necessity of verification; pressure on conventional assessment; the importance of faculty capacity; and the need for governance. However, a Commerce-specific integrated framework connecting these themes to future-ready outcomes remains underdeveloped.

Research Gap

Four gaps motivate the present paper. First, much of the literature examines higher education broadly, while Commerce education has distinctive combinations of numerical, regulatory, managerial and judgement-based learning. Second, opportunities and risks are often discussed as separate lists rather than as parts of an integrated institutional design. Third, access to AI is sometimes treated as equivalent to readiness, even though responsible use requires disciplinary knowledge, verification habits and ethical judgement. Fourth, assessment reform is frequently discussed independently of curriculum and faculty development, although these elements are interdependent.

The present study addresses these gaps by synthesising the literature into a Commerce-sensitive framework. The framework does not claim tested causal relationships; rather, it proposes theoretically reasoned linkages that can guide institutional practice and future empirical research.

Objectives of the Study

The following objectives are formulated for the purpose of study

- To examine the role, opportunities, and challenges of Generative Artificial Intelligence (GenAI) in teaching, learning, and assessment in Commerce education.
- To propose a conceptual framework for the responsible and ethical integration of Generative Artificial Intelligence (GenAI) into future-ready Commerce education.

Research Methodology

The study is conceptual, descriptive and based on secondary sources. It draws on peer-reviewed journal articles, systematic reviews, empirical higher-education studies and authoritative policy guidance relevant to GenAI, teaching, learning, assessment and AI competence. The paper does not claim to be a systematic literature review because no exhaustive reproducible database protocol, PRISMA screening process or meta-analysis was undertaken.

A thematic synthesis approach was used. Sources were read for recurring concepts and grouped into themes concerning: (i) AI literacy; (ii) curriculum integration; (iii) personalised and experiential learning; (iv) faculty readiness; (v) ethical governance; and (vi) assessment redesign. A second level of synthesis considered the learner practices needed to convert AI access into educational value: questioning, verification, interpretation, application, critique and transparent disclosure. These themes informed the proposed GAI-FRC Framework.

The conceptual approach is appropriate because the field is developing rapidly and institutional practice remains heterogeneous. The purpose is theory-building and integrative interpretation rather than statistical generalisation. A limitation is that the framework requires subsequent empirical validation across different institutions, programmes and student groups.

Opportunities of GenAI in Commerce Education

The opportunities of GenAI are:

- **Personalized explanation and scaffolding:** Commerce classrooms often contain learners with varied backgrounds in mathematics, language, accounting and technology. GenAI can provide alternative explanations, examples and stepwise practice. Used carefully, this may help students revisit difficult concepts at their own pace. The educational value is strongest when learners compare explanations and test them against textbooks, standards and teacher guidance.
- **Accounting and finance learning:** GenAI can generate practice scenarios, explain ratios, support interpretation of hypothetical financial statements and create variations of numerical problems. In accounting, it may help students articulate why a treatment is appropriate, but generated answers must be checked against applicable standards and facts. In finance, it can support scenario comparison and communication of concepts, while calculations and claims require independent verification.
- **Marketing and consumer analysis**: Students can use GenAI to generate customer personas, alternative campaign ideas and hypothetical market situations. A strong learning design asks students to identify assumptions, bias and missing evidence in generated proposals rather than accepting them as final strategies.
- **Human resource management:** GenAI can support interview simulations, role descriptions, policy comparison and workplace cases. Students can critique generated recruitment messages for bias, examine performance-feedback scenarios or compare alternative responses to employee-relations problems. Such activities connect AI use with ethical and managerial judgement.
- **Entrepreneurship and innovation:** GenAI can accelerate brainstorming, business-model exploration, value-proposition drafting and scenario generation. However, ideation should be followed by customer evidence, feasibility analysis and local contextualisation. This creates an opportunity to teach the difference between plausible text and validated business knowledge.
- **Research and academic communication:** GenAI may help with brainstorming, structuring an argument, generating search terms, improving clarity and practising presentations. It should not replace source reading, evidence evaluation or transparent authorship. Students need explicit instruction that generated citations may be false and that every source must be independently located and checked.
- **Formative feedback and practice:** Immediate feedback can support low-stakes practice, especially when students are required to explain whether the feedback is correct. Hybrid feedback—AI support combined with teacher judgement—may be more educationally defensible than automated substitution for instructors.
- **Employability and workplace preparation:** Future graduates are likely to encounter AI-assisted workflows. Commerce education can therefore use GenAI to teach task decomposition, prompt refinement, verification, professional communication and responsible disclosure. The aim should be adaptive capability and judgement, not dependence on a particular platform.

Challenges and Risks

The challenges and the Risks are as follows

- **Inaccuracy and fabrication:** GenAI may produce incorrect facts, invented references or outdated regulatory information. In Commerce disciplines, errors involving taxation, law, financial regulation or accounting standards can be consequential. Verification against authoritative sources must therefore be an assessed skill.
- **Academic integrity:** Students may submit generated work as their own or use AI in ways that bypass intended learning. Ambiguous institutional rules can worsen the problem. Clear task-level instructions are preferable to vague statements that AI is either completely allowed or completely forbidden.
- **Overdependence and cognitive offloading**: If students routinely outsource first attempts, calculations, interpretation or writing, they may weaken opportunities for productive struggle and independent reasoning. Teachers need to decide which cognitive processes students must demonstrate unaided and which may appropriately be augmented.
- **Privacy and confidentiality:** Entering personal data, unpublished research, institutional records or business information into external AI systems may create privacy and confidentiality risks. Commerce programmes should include data-handling rules in AI literacy training.
- **Bias and fairness:**Generated outputs can reproduce social or historical biases. This is especially relevant in recruitment, credit, marketing segmentation and performance evaluation. Bias critique should therefore be embedded in HRM, finance and marketing cases.
- **Unequal access:** Differences in connectivity, paid access, language capability and AI literacy can create new forms of educational inequality. Institutions should avoid designing essential learning activities around tools that some students cannot reasonably access.
- **Assessment validity:** Conventional take-home essays and generic assignments may no longer provide strong evidence of independent learning. Assessment should increasingly capture process, oral defence, contextual application, reflection, source verification and in-class performance.
- **Faculty readiness and workload**: Effective integration requires teachers to understand tool capabilities, limitations and discipline-specific risks. Without development support, AI may be used superficially or policies may be inconsistently applied.

Proposed GAI–FRC Conceptual Framework

The proposed GAI–FRC Framework—Generative AI for Future-Ready Commerce Education—integrates six enabling dimensions. The framework is a conceptual contribution derived from thematic synthesis and is not presented as an empirically validated causal model.

- **Dimension 1**: AI Literacy. Students and teachers require functional understanding of GenAI, prompt practices, limitations, verification, bias, privacy and disclosure. AI literacy is the foundation because uncritical use can convert apparent efficiency into misinformation or shallow learning.
- **Dimension 2**: Curriculum Integration. AI should be connected to programme outcomes and discipline-specific tasks. Accounting students may audit generated explanations; marketing students may test generated personas against evidence; HRM students may detect bias in generated recruitment content.
- **Dimension 3**: Personalised and Experiential Learning. GenAI should support practice, simulation, role-play, alternative explanations and case exploration. The purpose is to expand opportunities for active learning rather than automate completion.
- **Dimension 4**: Faculty Readiness. Teachers need professional development in task design, verification, ethics and assessment. Faculty judgement remains essential for deciding where AI augments learning and where unaided competence must be demonstrated.
- **Dimension 5**: Ethical Governance. Institutions need clear rules on acceptable use, disclosure, privacy, accountability and equitable access. Governance should be understandable at the level of individual assignments and not remain only as a general policy document.

- **Dimension 6**: Assessment Redesign. Assessment should make learning processes visible. Suitable approaches include oral defence, live problem-solving, local cases, reflective commentaries, source-verification logs, staged submissions and explicit levels of AI permission.

These six dimensions converge in responsible and pedagogically purposeful integration. The framework then emphasises six learner practices—question, verify, interpret, apply, critique and disclose ethically. These practices are proposed as mechanisms through which AI-supported activity can contribute to future-ready outcomes: digital competence, critical thinking, analytical ability, creativity, ethical awareness, adaptability and employability readiness.

A key proposition of the framework is that AI access alone is insufficient. Future readiness emerges when technology use is mediated by disciplinary knowledge, human agency, institutional safeguards and assessment designs that reward genuine reasoning.

Findings

The following are the findings of the study

- The study found that the educational value of GenAI depends more on instructional and assessment design than on the technology itself. Well-designed learning tasks promote critical thinking, while generic assignments encourage overreliance on AI.
- The findings indicate that Commerce education should prioritize verification, evidence-based reasoning, and critical evaluation of AI-generated content, as accuracy is essential in professional domains such as accounting, taxation, finance, and business decision-making.
- The study reveals that traditional assessment methods requiring only final outputs are becoming less reliable in the GenAI era. Assessments incorporating process documentation, authentic tasks, and oral justification provide a more valid measure of student learning.
- The study also finds that effective GenAI integration requires institutional support, including faculty training, clear governance policies, and responsible assessment practices, rather than placing responsibility solely on students.

Suggestions

The following suggestions are given from the study

- Commerce departments should introduce foundational AI literacy early in programmes and revisit it at increasing levels of disciplinary complexity. Students should learn prompt design, source verification, privacy, bias recognition and disclosure.
- Curricula should include discipline-specific AI activities. Examples include auditing an AI-generated accounting explanation, verifying a financial claim, critiquing a marketing persona, testing an entrepreneurial idea against field evidence and identifying bias in an HR scenario.
- Institutions should establish clear and proportionate AI-use rules. Each assessment should state whether AI is prohibited, limited, permitted with disclosure or integral to the task. Students should know what evidence of process is required.
- Assessment should be redesigned around authenticity and visible reasoning. Oral defence, presentations, local cases, live problem-solving, reflective notes, version histories and source-verification logs can complement written submissions.
- Faculty development should be continuous rather than one-time. Teachers need opportunities to experiment with GenAI, compare outputs, redesign assessments and share discipline-specific practices.
- High-risk information should be checked against authoritative sources. Commerce students should be trained never to rely solely on generated content for current law, taxation, regulation, accounting standards or consequential financial decisions.
- Institutions should protect equity by considering device access, connectivity, language and paid-feature differences. Alternative pathways should exist when a required tool is inaccessible.
- AI use should be disclosed transparently. A simple declaration can state the tool category, purpose of use and the student's responsibility for verification and final content.

Scope for Future Research

Future studies can empirically validate the GAI–FRC Framework using scale development, exploratory and confirmatory factor analysis, and structural equation modelling. Comparative studies may examine B.Com, M.Com, BBA and MBA students; government and private institutions; rural and urban contexts; or differences across accounting, finance, marketing and HRM specialisations.

Longitudinal research is needed to determine whether sustained GenAI use improves or weakens independent reasoning. Experimental studies can compare AI-supported and non-AI learning designs. Research should also examine faculty readiness, language inclusion, unequal access and the reliability of GenAI in Indian Commerce curricula and regulatory contexts.

Conclusion

Generative Artificial Intelligence is becoming part of the environment in which higher education and professional work operate. For Commerce education, its potential is substantial: personalised explanation, case generation, simulation, formative practice, communication support and workplace preparation. Yet the same capabilities create risks involving misinformation, academic integrity, overdependence, privacy, bias, inequality and assessment validity.

This paper argues against both uncritical adoption and blanket rejection. The proposed GAI–FRC Framework positions AI literacy, curriculum integration, personalised and experiential learning, faculty readiness, ethical governance and assessment redesign as interconnected conditions for responsible use. It further emphasises learner practices of questioning, verification, interpretation, application, critique and ethical disclosure.

The central educational principle is that GenAI should augment rather than replace human reasoning. Future-ready Commerce graduates will need more than the ability to obtain rapid answers. They will need the capacity to judge reliability, connect outputs to disciplinary knowledge, recognise ethical implications, adapt to changing technologies and remain accountable for decisions. A human-centred, discipline-sensitive and pedagogically purposeful approach offers the strongest basis for realising the benefits of GenAI while protecting the quality and integrity of Commerce education.

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Annexure

Table 1: Illustrative GenAI Applications across Commerce Disciplines

Discipline	Illustrative Use	Required Human Safeguard
Accounting	Practice scenarios; explanation; error detection	Verify against standards and facts
Finance	Scenario comparison; concept explanation	Check data, assumptions and calculations
Marketing	Persona and campaign ideation	Validate with evidence and context
HRM	Interview simulation; policy critique	Check bias, fairness and legal context
Entrepreneurship	Idea and business-model exploration	Test feasibility and customer evidence
Research	Brainstorming; search terms; structural support	Read sources and verify every citation

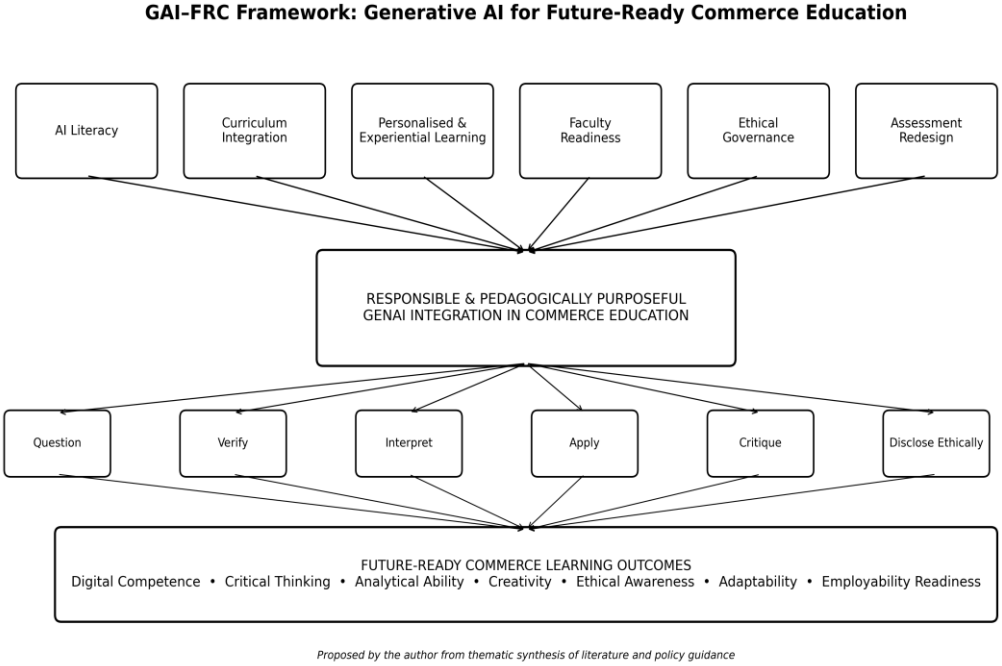


Figure 1: Proposed GAI–FRC Conceptual Framework

Source: Proposed by the author based on thematic synthesis of reviewed literature and policy guidance.

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