

Blended Learning as a Gender-Inclusive Pathway for FinTech Adoption in Higher Education: An Integrative Review and Conceptual Framework

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Abstract

The purpose: Digital transformation has transformed higher education and financial services, but the advantages of digital transformation are not evenly distributed. Blended learning is becoming more popular in higher education due to its ability to integrate face-to-face and online learning, flexibility, collaboration, and self-paced learning. Meanwhile, the digital and financial inclusion of women in emerging economies remains a challenge, while the financial inclusion of women has been enhanced through parallel growth of FinTech platforms like mobile wallets, UPI, mobile banking, digital microcredit, and digital bookkeeping. This paper combines these two research streams to explore the design of blended learning as a gender-inclusive pathway to FinTech adoption. Methodology: The study is based on an integrative literature-based synthesis with two uploaded source documents: literature review on blended learning in higher education and systematic review on gender disparities in FinTech adoption in emerging economies with Delhi NCR as a focal context. Findings: The synthesis reveals eight themes of convergence: digital literacy, access to devices and connectivity, flexible learning, student engagement, trust and cyber safety, cultural norms, inclusive app design, and policy-related outreach. The paper outlines a five-stage blended learning model: orientation, digital foundation, guided practice, contextual application, and sustained mentoring. Originality: The study is original because it links educational technology and digital financial inclusion, and demonstrates that HEIs can be capability-building ecosystems for women learners. Practical implications: Universities, online education providers, NGOs and FinTech companies should co-develop multilingual, low-data, simulation-based, peer-supported learning modules to develop confidence, safety awareness and practical FinTech usage.

Keywords: Blended learning; FinTech adoption; gender digital divide; higher education; financial inclusion; digital literacy; women in technology; emerging economies; Delhi NCR; inclusive pedagogy.

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1. Introduction

Digital technology has brought about a significant transformation in how people learn, work, transact and engage in society. In higher education, digital transformation can be seen in the form of learning management systems, virtual classrooms, video lectures, e-resources, online discussions, digital assessment, and mobile learning. In the financial industry, digital transformation can be seen in the form of FinTech platforms such as mobile banking, electronic wallets, Unified Payments Interface (UPI), digital lending, peer-to-peer payments, insurance technology, and digital bookkeeping tools. While these domains are typically examined in isolation, they are all grounded in the same principles: meaningful participation depends on digital access, digital literacy, confidence, trust, and supportive institutional design. The literature review of blended learning that was uploaded defines blended learning as the combination of face-to-face learning and online learning methods and technologies. It highlights flexibility, access to resources, engagement, collaboration, personalisation and enhanced learning outcomes as key advantages. It also mentions challenges like technology infrastructure, faculty support, course design effort, resistance to change, unequal access to devices, and challenges in maintaining participation in

online components. The systematic review uploaded demonstrates that the development of digital finance has not been accompanied by equal inclusion, as there are gender gaps in the adoption of FinTech. Digital illiteracy, lack of personal smartphone ownership, limited mobile internet access, financial dependence, cultural norms, technophobia, fear of fraud, and limited gender-sensitive design in FinTech applications are all barriers faced by women, particularly those from rural, peri-urban, low-income, and less educated groups. The paper also highlights that women who are urban, educated, and working are more likely to access digital financial services than women who are not urban, not educated, and not working. This manuscript proposes that these two fields of research can be productively linked. HEIs, especially those with blended or online delivery, can serve as platforms to develop women learners' digital financial skills. Blended learning can provide structured exposure to digital tools, safe practice environments, peer support, instructor guidance, and self-paced modules. Incorporating FinTech literacy into these learning contexts can help students gain theoretical understanding and practical confidence in the use of digital financial services. The research thus poses the question: What are the design principles of blended learning in higher education to overcome gender barriers to the adoption of

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FinTech and to encourage inclusive digital financial participation? This is a significant question for emerging economies like India, where digital finance is growing at a fast pace, but digital exclusion is limiting equitable. The current literature on blended learning is mainly concerned with academic achievement, student satisfaction, student engagement, critical thinking, flexibility, and teaching effectiveness. The current literature on gender gaps in FinTech is largely concerned with women's access to digital financial services, digital literacy, mobile ownership, cultural barriers, and policy measures. But, there is not much research that explicitly links blended learning as a pedagogical model to the outcome of inclusion in the context of FinTech. This leaves an interdisciplinary research gap. This paper makes three contributions. First, it brings together two streams of literature that are related but distinct: digital pedagogy and digital financial inclusion. Second, it creates a conceptual framework to understand how blended learning can contribute to gender-inclusive FinTech readiness. Third, it makes practical suggestions for curriculum and policy for HEIs, online learning providers, NGOs and FinTech companies. The novelty is that blended learning is not just a teaching approach, but a more comprehensive capability development process. The paper proposes that blended learning should not only enable students to complete courses, but also develop digital life skills, such as safe and confident use of digital financial technologies participation.

2. Research Gap and Contribution

Existing blended learning research largely focuses on academic performance, student satisfaction, engagement, critical thinking, flexibility, and teaching effectiveness. Existing FinTech gender divide research focuses on women's access to digital financial services, digital literacy, mobile ownership, cultural constraints, and policy interventions. However, limited work explicitly connects blended learning as a pedagogical model with FinTech adoption as an inclusion outcome. This creates an interdisciplinary research gap.

The contribution of this paper is threefold. First, it synthesizes two related but distinct streams of literature: digital pedagogy and digital financial inclusion. Second, it develops a conceptual framework explaining how blended learning can support gender-inclusive FinTech readiness. Third, it proposes practical curriculum and policy recommendations for higher education institutions, online learning providers, NGOs, and FinTech companies.

The originality lies in shifting blended learning from a narrow instructional method to a broader capability-building mechanism. The paper suggests that blended learning should not only help students complete courses; it should also build digital life skills, including safe and confident use of digital financial technologies.

3. Review of Literature: Blended Learning in Higher Education

Blended learning combines physical classroom interaction with online learning activities. It allows students to access digital content, recorded lectures, discussion forums, multimedia resources, online quizzes, and collaborative tasks while still benefiting from face-to-face mentoring and classroom interaction. The source literature highlights that this model offers flexibility in terms of time and place, enabling students to learn at their own pace and revisit content when needed.

A repeated theme in the blended learning literature is improved student engagement. Online activities can support discussion, collaboration, reflection, and peer learning. Face-to-face sessions can be used for clarification, interaction, and guided problem-solving. This combination may improve student satisfaction and motivation because learners receive both autonomy and support. The literature also suggests that blended learning can promote critical thinking, problem-solving, collaboration, digital literacy, and self-directed learning. However, the literature also warns that blended learning is not automatically effective. Course design matters. Faculty must be trained to create meaningful online activities instead of simply uploading materials. Students must have access to devices, internet connectivity, and technical support. Institutions must ensure that online participation is inclusive and that learners are not excluded because of economic or technological disadvantage. These concerns are especially relevant in emerging economies where digital access varies across gender, income, geography, and educational background. Thus, blended learning has two sides. It can expand access and personalize learning, but it can also reproduce inequality if learners lack digital resources or confidence. This dual nature makes it important to connect blended learning with gender-sensitive digital inclusion strategies.

4. Review of Literature: Gender Disparities in FinTech Adoption

FinTech has revolutionized the way financial services are delivered, allowing customers to make payments, save money, take out loans, get insurance, and bookkeep via digital channels. In emerging economies, FinTech is often seen as a means to financial inclusion as it can be used to serve populations that are not served by traditional banking. The uploaded FinTech review, however, reveals that gendered digital exclusion is still a significant challenge. Digital illiteracy is identified as a key obstacle in the review. A lot of women have not had much experience with smartphones, financial applications, digital passwords, OTP verification, QR codes, cyber safety, and transaction records. Access to FinTech platforms is not equal to meaningful use without digital skills. Another obstacle is ownership of devices. Shared family phones, reducing privacy and regular practice for women. In some families, men are in control

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of both devices and finances, limiting women's autonomy. Adoption is also influenced by socio-economic factors. Women who have low income, lack documentation, low asset ownership, and unstable income may be less confident in formal financial services. Cultural factors are also important. In many communities, finance is seen as a man's job, and women's mobility, decision-making authority and access to training are restricted. Lack of follow-up support, fear of fraud, and fear of making mistakes also limit re-use of FinTech tools. The Delhi NCR discussion in the source paper provides a valuable regional perspective. Women in Delhi NCR who are urban, educated and working are more inclined towards using wallets, UPI, mobile banking and digital bookkeeping apps. Meanwhile, outer NCR, peri-urban and lower income communities continue to experience challenges related to access to shared devices, documentation, technophobia and reliance on male family members. NGO and startup projects have potential when they incorporate local language training, peer learning, women facilitators, and business-related examples.

Table 1. Source-based thematic comparison

Theme	Blended learning evidence	FinTech gender divide evidence	Integrated interpretation
Access	Online resources increase access to learning materials and allow flexible participation.	Women may lack personal smartphones, mobile internet, documentation, or privacy.	Learning platforms and FinTech training must be designed for unequal access realities.
Digital literacy	Blended learning develops digital learning habits through LMS, videos, forums, and online tasks.	FinTech use requires app navigation, digital safety, transaction knowledge, and confidence.	Digital learning skills can be extended into digital financial skills.
Engagement	Blended learning can improve motivation through interaction, collaboration, and self-paced tasks.	Women adopt FinTech more when peer support and trusted guidance	Peer-led blended activities can reduce fear and strengthen adoption.

		are available.	
Equity risk	Unequal device access can reduce participation in online learning components.	Gendered device access and cultural norms restrict FinTech usage.	Digital education without equity planning can reproduce gender exclusion.
Policy need	Faculty training and institutional support are needed for effective implementation.	Gender-sensitive policy, local training, and inclusive app design are required.	Universities should link pedagogy, policy, and community outreach.

5. Methodology

Pedagogical basis of blended learning in higher education, definitions, advantages, results, restrictions and prospects. The second document was the financial inclusion foundation, particularly gender gaps in FinTech adoption in emerging economies and Delhi NCR. The synthesis was carried out in four steps. In the first phase, key ideas were identified from each document. The concepts for blended learning were flexibility, engagement, personalization, collaboration, digital skills, academic performance, infrastructure, faculty support, and access inequality. The concepts for FinTech adoption were digital literacy, smartphone access, cultural norms, financial autonomy, trust, fear of fraud, policy intervention, and inclusive design. In the second stage, the concepts were coded into broader themes. The third stage involved comparing themes from both sources to find convergence and divergence. In the fourth stage, an original framework was created to explain how blended learning can be used as a pathway for gender-inclusive FinTech readiness. The study is conceptual and review based. It does not take primary survey results. The graph and tables in this paper are qualitative synthesis tools. They are not statistical results from field data, but rather reflect the salience and linkage of themes in the two documents.

6. Findings: Convergent Themes

The first finding is that access is foundational. Both blended learning and FinTech adoption require access to devices, internet, platforms, and support. Without access, neither digital learning nor digital finance can become inclusive. The second finding is that digital literacy is the strongest bridge between the two domains. A learner who becomes comfortable with online learning tools is better positioned to engage with other digital platforms,

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including financial applications, provided that the curriculum explicitly transfers these skills.

The third finding is that confidence and trust are as important as technical access. Students may disengage from online learning when they feel isolated or unsupported. Women may avoid FinTech when they fear mistakes or fraud. Blended learning can address this through guided practice, low-risk simulations, peer mentors, and face-to-face reassurance. The fourth finding is that cultural and gender norms must be addressed directly. Digital modules alone cannot overcome social restrictions unless they are paired with community-sensitive support, relatable examples, and gender-responsive facilitation.

The fifth finding is that inclusive design determines sustainability. FinTech applications and learning platforms must be simple, multilingual, low-data, privacy-sensitive, and compatible with low-cost devices. The sixth finding is that policy interventions work better when linked to education and outreach. Account ownership, app availability, or digital infrastructure do not guarantee meaningful usage unless learners receive continuous support.

Figure 1. Cross-theme prominence in blended learning and gendered FinTech adoption

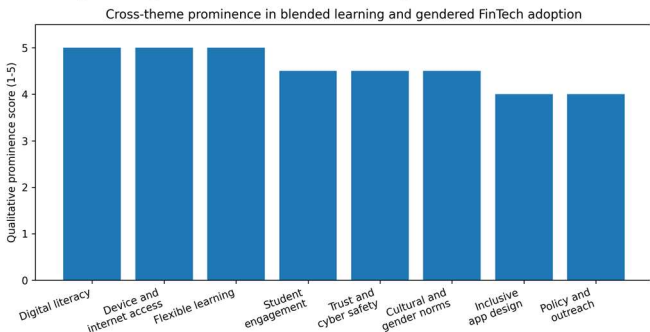


Table 2. Proposed higher education blended learning model for women-centred FinTech readiness

Stage	Delivery design	Core content	Gender-inclusive feature	Learning outcome
Orient ation	Face-to-face induction and live online introduction.	Digital finance basics, purpose of UPI, wallets, mobile banking, and digital records.	Local language explanation, familiar examples, female facilitators, and non-judgment	Reduced anxiety and improved readiness.

			ntal space.	
Digital foundation	Short mobile-friendly online modules.	Passwords, OTP, QR payment, app navigation, transaction history, and cyber hygiene.	Audio-visual content, icons, low-data materials, and downloadable guides.	Improved digital and financial literacy.
Guided practice	Computer lab, mobile lab, or supervised virtual workshop.	Mock payments, fraud detection exercises, wallet demo, digital bookkeeping practice.	Simulation before real transactions and peer-assisted learning.	Confidence, trust, and procedural fluency.
Contextual application	Project-based blended learning.	Budget planning, fee payment, SHG accounting, micro-business records, savings goals.	Tasks linked to women learners' real economic roles.	Transfer of learning to practical life.
Sustained mentoring	Follow-up sessions, WhatsApp/Telegram help group, peer mentor network.	Troubleshooting, safety reminders, updates, and reflective learning.	Ongoing support and community trust.	Sustained and independent FinTech usage.

7. Discussion

The integrated analysis suggests that blended learning can serve as a bridge between education and inclusive digital finance. In many institutions, blended learning is adopted mainly to modernize teaching or increase flexibility. However, the findings of this paper suggest that its potential is much broader. When blended learning is intentionally designed around capability building, it can develop the exact skills that women need to engage with FinTech: digital navigation, confidence, transaction awareness, cyber safety, and problem-solving. This is especially important because FinTech exclusion is not caused by a single barrier. It is produced by the

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interaction of technology, education, income, gender norms, household decision-making, trust, and design. A short training session may raise awareness but may not create sustained adoption. Blended learning offers an advantage because it can combine repeated online exposure with human guidance. Students can watch videos, complete quizzes, practice in labs, ask questions in live sessions, receive peer support, and apply learning in projects.

The findings also show that higher education institutions should not assume that all learners are equally digitally ready. Women learners from low-income, rural, peri-urban, or first-generation education backgrounds may need additional support. Inclusive blended learning must therefore include device-sensitive design, local language materials, offline alternatives, mentoring, and practical demonstrations. The goal is not simply to teach about FinTech but to build confidence for safe and independent use.

The Delhi NCR context demonstrates that digital infrastructure alone does not remove exclusion. Even in a region with relatively stronger connectivity and digital awareness, women from lower-income and peri-urban backgrounds face barriers related to shared devices, documentation, fear, and dependence. Therefore, universities and online education providers in such regions can play an important role by connecting curriculum with community outreach and women's entrepreneurship support.

8. Practical Implications for Curriculum Design

The proposed curriculum can be integrated into management, commerce, economics, entrepreneurship, social work, and general education courses. The curriculum should include five modules: digital citizenship and cyber safety; digital financial services; hands-on FinTech practice; gender, autonomy, and financial confidence; and community or entrepreneurship application.

Assessment should be competency-based. Instead of relying only on written examinations, instructors can use online quizzes, reflective logs, demonstration tasks, peer teaching, digital safety checklists, and project reports. For example, students may prepare a simple local-language guide on avoiding UPI fraud, demonstrate how to check transaction history, or design a digital bookkeeping plan for a small woman-owned enterprise. Faculty development is essential. Teachers must be trained to design blended activities that are not merely content repositories. They should learn to create short videos, interactive tasks, scenario-based simulations, and inclusive discussion spaces. They should also be sensitive to learners who lack confidence, share devices, or fear making mistakes in digital environments.

9. Policy and Institutional Implications

At the policy level, digital education and digital financial inclusion should be connected more explicitly. Government schemes related to digital literacy, financial

inclusion, and women entrepreneurship can collaborate with higher education institutions. Universities can act as training hubs for students and nearby communities. Online and distance education providers can include digital financial literacy as a life-skill component for learners who cannot attend regular campuses.

Institutions should collect gender-disaggregated data on digital access, LMS usage, module completion, device constraints, and confidence levels. Such data can help identify which learners require additional support. FinTech providers should also collaborate with educators to design low-risk simulations, multilingual interfaces, and privacy-aware onboarding. NGOs can support community trust by providing localized training and follow-up.

Policy makers should move beyond access indicators such as number of accounts opened or number of apps downloaded. Meaningful inclusion should be measured through independent usage, confidence, frequency of transactions, ability to detect fraud, and capacity to use digital finance for education, entrepreneurship, and household financial planning.

10. Managerial and Social Implications

For higher education managers, the research highlights the need to integrate employability, digital capability, and financial inclusion. Universities that develop blended FinTech literacy modules can improve student readiness for modern workplaces and entrepreneurship. For FinTech firms, the paper shows that women learners represent an important user segment that requires trust-building, simple design, and culturally sensitive onboarding.

For society, the model can support women's agency. When women gain confidence in digital finance, they may become more capable of managing savings, receiving payments, accessing credit, supporting small businesses, and making informed financial decisions. This can contribute to broader goals of gender equity, financial resilience, and inclusive economic participation.

11. Limitations and Future Research

The paper is limited by its reliance on secondary source documents. It does not include primary data from students, faculty, women users, or FinTech providers. Therefore, the proposed framework should be empirically tested. Future studies can design and implement a blended FinTech literacy module and measure changes in digital financial knowledge, confidence, perceived usefulness, perceived risk, and actual usage intention.

Future research may compare outcomes across online, blended, and face-to-face training formats. It may also examine differences by gender, income, rural-urban location, educational level, and employment status. Longitudinal studies can explore whether training produces sustained FinTech usage after six months or one year. Another important direction is UI/UX research to

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test which app features support first-time women users, such as voice guidance, local languages, visual icons, and privacy controls.

12. Conclusion

This research developed integrative argument connecting blended learning in higher education with gender-inclusive FinTech adoption. The blended learning literature shows that hybrid teaching can improve flexibility, engagement, access, collaboration, self-directed learning, and critical thinking. The FinTech gender divide literature shows that women's digital financial participation is constrained by digital illiteracy, limited smartphone access, socio-economic dependency, cultural norms, fear of fraud, and insufficiently inclusive design.

By integrating these insights, the paper concludes that blended learning can become a strategic pathway for women-centred digital financial capability building. Its value lies in combining online flexibility with human support, repeated practice, peer learning, simulations, and contextual application. However, this potential will be realized only if institutions design blended learning with equity at the centre. Digital learning must be mobile-friendly, multilingual, low-data, safe, practical, and sensitive to gendered constraints.

The proposed framework offers a basis for curriculum development, institutional strategy, and future empirical research. In emerging economies, higher education can play a crucial role in bridging not only the learning divide but also the digital financial divide. A university that teaches learners how to use technology confidently, safely, and independently contributes to both educational quality and social inclusion.

Table 3. Action agenda for practical contribution

Stakeholder	Recommended action	Implementation method	Evaluation indicator
Universities	Embed FinTech literacy in blended courses.	Micro-modules, labs, simulations, and projects.	Completion rates, confidence scores, practical demonstration.
Faculty	Use inclusive blended pedagogy.	Short videos, peer support, local examples, formative feedback.	Engagement, attendance, task submission, learner feedback.
FinTech firms	Design women-friendly interfaces.	Local language, icons, audio help, low-data	Usability scores, repeat usage,

		mode, privacy controls.	error reduction.
Government	Link digital literacy and financial inclusion policy.	Gender impact assessment, institutional partnerships, device support.	Gender-disaggregated adoption and active usage.
NGOs/Community groups	Provide trust-based outreach.	Women trainers, SHG workshops, post-training support.	Sustained usage and community referrals.

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