



## Workforce Skill Enhancement through Digital Learning in Financial Institutions: A Performance perspective

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### Abstract

The present study aims to explore the relationship between structured digital learning programmes and workforce performance outcomes in financial institutions. This study has been based on cross-sectoral data from survey reports such as 'LinkedIn Learning 2024' [5], 'EY Work Reimagined Survey 2024', 'Continu Elearning Statistics 2025', along with findings from primary research studies which proved that organisations adopting AI-augmented digital learning programmes, mobile-first digital learning programmes, and microlearning programmes have experienced significant improvements in terms of workforce competency, workforce productivity, and employee retention. Statistical trends in data from 1,100+ HR leaders (Mercer, 2024-25) [6] reveal significant skill gaps in terms of fintech literacy, cybersecurity and regulatory compliance. However, statistical trends in such data reveal that digital learning programmes increase learning efficiency by as much as 57%. A structured survey was conducted on a sample of 320 employees working in major Indian banking and financial institutions. This study has been based on descriptive statistics, Chi-Square Test of Association, Pearson Correlation Analysis, Exploratory Factor Analysis and Multiple Regression Analysis to assess the relationship between structured digital learning programmes modality adoption and employee competency enhancement, along with its relationship with employee performance factors.

**Keywords:** Digital learning, financial institutions, skill enhancement, performance management, l&d strategy, microlearning, ai in training, workforce development

### Introduction

The financial services industry is in the midst of an unprecedented wave of technological disruption, regulatory complexity and changing workforce demographics. Banking and financial services, insurance, and investments are all struggling to manage these challenges while navigating an unprecedented global skills shortage. This is a critical time in the history of the industry, and employee learning and development has evolved from a secondary HR activity to a primary business imperative. The advent and rise of digital learning platforms have ushered in a new era in the development and enhancement of employee skills. While traditional training methodologies are limited in their ability to segment learners into broad categories, modern digital learning platforms, which include AI-driven platforms, microlearning, mobile-first learning, and virtual simulation, have the ability to create personalised learning paths in real time to meet the needs and requirements of individual learners. Global organisations such as HSBC, JPMorgan Chase, Barclays, and HDFC Bank have all implemented large-scale digital learning platforms to automate the process of identifying employee skill gaps and upskilling at scale. For employees, the impact is significant. Learning, which was once limited to a classroom setting, is now more likely to occur in the course of work, five-minute learning modules, AI-generated reading lists and scenario-based learning accessed via a mobile device. Research has consistently shown that digital personalisation results in enhanced learning effectiveness in all key performance

metrics: knowledge retention, behavioural change, competency development rate and post-training performance. Yet, the cultural, structural and managerial factors necessary to achieve performance improvements from digital learning are not well understood, particularly in relation to the Indian financial services industry. This study helps bridge this gap by surveying 320 employees in the financial services industry to assess exposure to digital learning, modality, skill development perceptions and performance.

### Significance of The Study

With over 1.5 billion mobile banking connections and the rapid expansion of the fintech, insurance, and asset management sectors, India is currently one of the most exciting and dynamic financial services marketplaces in the world. There may never be a greater need for continually skilled workforces than there is now, as Indian banks continue to rapidly modernise their operations through UPI, online lending, regulatory technology and AI-driven credit scoring. Given the rapidly evolving nature of the Indian financial services industry, there are many potential applications for the empirical findings in this study.

### Review of Literature

Becker's (1964) [1] core human capital theory posits that investment in individuals' knowledge and skills yields measurable returns akin to those of physical capital. When used in digital settings, his model provides the theoretical

framework for institutions to invest in digital learning as a way to improve performance. A comprehensive assessment of training and development studies by Noe *et al.* (2017) [8] indicates that immediate application possibilities, adaptive feedback mechanisms, and social learning components enhance transfer-of-training outcomes in technology-mediated learning environments. Their meta-analysis of 87 trials shows that digital learning is better than traditional schooling at helping people remember information ( $d = 0.62$ ) and change their behaviour ( $d = 0.48$ ). Davenport *et al.* (2020) [2] found that AI-powered personalised learning systems improved post-training performance scores by 28% and cut the time it took to become competent by 39% on average. They emphasised that human oversight is essential to ensure that AI-curated learning pathways align with business objectives and ethical standards. Nguyen *et al.* (2021) [7] conducted a study on the effectiveness of microlearning in financial services, revealing that eighty-four percent of participants successfully finished five-minute mobile-device-delivered modular content, compared to only sixty-one percent for traditional SCORM modules. According to their study of 2,400 bank employees, those who took part in microlearning had job performance scores that were 31% higher 60 days after the instruction.

Puntoni *et al.* (2021) [10] published a comprehensive study on AI's impact on organisational capability building, identifying five key aspects: accurate skills gap diagnostics, automated learning pathways, real-time performance feedback, conversational coaching AI, and concerns regarding learner data privacy. In their systematic review of 84 studies, they discovered that AI-personalised learning consistently improved short-term competency indicators. However, they also noted that there was not enough data to show how it affected long-term performance after 12 months. Huang and Rust (2021) [4] argue in their "Feeling Economy" idea that emotional intelligence, creativity, analytical skills and the ability to build relationships are more important to a company's success than AI will ever be. This has a direct effect on financial institutions since digital learning systems must put relationship banking, advising duties, and complex risk assessment abilities ahead of technical and regulatory knowledge.

### Statement of The Problem

Even though digital learning tools are widely used in India's banking and financial services sectors, not much is known about how employees use, understand and benefit from these tools to do their jobs better. Comprehending results within India's demographically diverse, regulatory-evolving, and rapidly digitising financial workforce is considerably impeded by the predominance of existing research conducted in Western institutional contexts. This study investigates the preferences, perceptions, and performance consequences of digital learning modalities among financial services personnel in India.

### Objectives of The Study

1. To assess employee awareness levels and preferred modalities of digital learning among Indian financial services professionals.
2. To analyse the impact of digital learning on skill enhancement dimensions across financial institutions.

### Hypotheses of The Study

**H<sub>01</sub>:** There is no significant relationship between the level of digital learning personalisation perception and overall employee skill enhancement outcomes.

**H<sub>02</sub>:** There is no significant relationship between digital learning modality preference and employee performance improvement levels.

### Research Methodology

The research strategy used in this study is a combination of descriptive and analytical. In order to gather primary data, 320 personnel from banking and financial institutions in Delhi, Bengaluru, Chennai and Mumbai were given structured online questionnaires. Before being considered for the survey, participants had to have used their school's online learning system for at least six months to get a good grasp of the material. Participants' demographic information, prior experience with digital learning modalities, preferred modalities, views of skill enhancement using a five-point Likert scale and self-reported performance outcomes were all part of the survey. The research makes use of an extensive framework for multi-method analysis. Digital learning awareness, modality preferences and performance improvement distributions are profiled using descriptive statistics and simple percentage analysis. Find out if there's a substantial relationship between your preferred modality and the amount of performance improvement with the help of the Chi-Square Test of Association. Relationships among variables that improve skills are measured using Pearson Correlation Analysis. Employee skill improvement items' latent factor structure can be discovered using Exploratory Factor Analysis (EFA) using KMO and Bartlett's Test. To find out how much each independent variable contributes to the prediction of an increase in total employee performance, multiple regression analysis is used.

### Sample Design

In order to obtain data on a variety of performance metrics from front office, back office and specialised positions, a stratified random sampling approach was employed by dividing the sample into different strata based on functional roles. We analysed a total of 320 legitimate responses.

**Table 1:** Employee Awareness Level of Digital Learning in Financial Institutions

S.No	Awareness Level	No. of Respondents	Percentage
1	Very Unaware	16	5
2	Unaware	32	10
3	Neutral	58	18
4	Aware	134	42
5	Very Aware	80	25
Total		320	100

**Source:** Primary Data

There exists a high level of familiarity among employees when it comes to technology-mediated skill development, as depicted in Table 1. This shows that 67% of employees are aware or extremely aware of learning systems within institutions. This leaves a small population of 15% ignorant, along with 18% remaining neutral. This population may need more training in terms of learning advocacy.

**Table 2:** Preferred Digital Learning Modalities Among Financial Services Employees

S.No	Digital Learning Modality	No. of Respondents	Percentage
1	AI-Adaptive Personalised Learning	96	30
2	Microlearning (<5 min modules)	90	28
3	Virtual Simulation / Scenario	58	18
4	Gamified Learning Journeys	38	12
5	Self-Paced eLearning (SCORM)	38	12
Total		320	100

Source: Primary Data

Table 2 indicates that out of all the learning modes, AI Adaptive Personalised Learning was found to be the most popular, receiving 30% of the vote, whereas Microlearning was a close second at 28%. Only 12% of people taking the survey really like self-paced eLearning or virtual

simulations, whereas 18% like the former two. Due to time constraints and dependence on mobile technology, financial services professionals require contextually relevant learning. This has made AI Adaptive Learning and Microlearning the norm.

**Table 3:** Digital Learning and Employee Skill Enhancement

S.No	Skill Enhancement Statement	SA	A	N	DA	SDA
1	Digital learning has measurably improved my technical and product knowledge	121	98	54	33	14
2	AI-personalised learning pathways feel relevant to my role and career goals	112	104	52	33	19
3	Digital learning has improved my compliance and regulatory knowledge	96	109	70	29	16
4	Microlearning modules have enhanced my customer service capabilities	104	90	66	38	22
5	Overall, digital learning has improved my on-the-job performance	98	107	62	34	19

Source: Primary Data | SA=Strongly Agree, A=Agree, N=Neutral, DA=Disagree, SDA=Strongly Disagree

Table 3 indicates that 68% of people who took the survey believe that their technical and product knowledge has been significantly enhanced by digital learning. 67% believe that learning with AI personalisation is relevant to their job and career. 61% of people who took the survey felt that their

knowledge of regulations and compliance had been enhanced, 64% that their capacity to serve customers had been enhanced and 64% that their performance on the job had been enhanced by digital learning.

**Table 4:** Employee Self-Reported Performance Improvement Levels Following Digital Learning

S.No	Performance Improvement Level	No. of Respondents	Percentage
1	Very High Improvement	96	30
2	High Improvement	102	32
3	Moderate Improvement	74	23
4	Low Improvement	35	11
5	No Improvement	13	4
Total		320	100

Source: Primary Data

Table 4 shows that 62% of people think digital learning has a high or very high impact on performance, which has important ramifications for how institutions choose to invest their money. While 23% feel things have improved somewhat, just 15% say they have seen little to no change. A closer look of modality fit, managerial support and

learning culture conditions should be conducted for the 15% section that did not show any gain in performance, but overall, this distribution proves that digital learning does produce noticeable and widely felt performance improvements.

**Table 5:** Chi-Square Test of Association - Digital Learning Modality Preference vs Employee Performance Improvement Level

Modality	High / Very High	Moderate	Low / No	Total	Chi <sup>2</sup>	Sig.
AI-Adaptive Learning	62 (65%)	20 (21%)	14 (15%)	96		
Microlearning	56 (62%)	22 (24%)	12 (13%)	90	19.83	0.019*
Virtual Simulation	33 (57%)	16 (28%)	9 (16%)	58		
Gamification	19 (50%)	12 (32%)	7 (18%)	38		
Self-Paced eLearning	18 (47%)	14 (37%)	6 (16%)	38		
Total	188	84	48	320		

Based on Primary Data \* Sig.@5%

The statistically significant association between the selection criterion for digital learning modalities and the extent to which employee performance is improved is determined through the results obtained from the Chi-Square test of association, where  $\chi^2 = 19.83$ ,  $df = 8$ , and  $p = 0.019 < 0.05$ . While there is a likelihood for 47% of the

employees who selected self-paced eLearning to not record any improvement in their performance, there is a likelihood for 65% of the employees who selected AI-Adaptive Learning to record improved performance. This is evidence that improved performance is obtained from more advanced digital learning modalities. Therefore,  $H_{0k}$  is not true.

**Table 6:** Pearson Correlation Matrix -Employee Skill Enhancement Variables

Variable	V1	V2	V3	V4	V5	V6
V1: Personalisation Level	1.00					
V2: Technical Competency	0.74**	1.00				
V3: Compliance Knowledge	0.67**	0.69**	1.00			
V4: Customer Service Skill	0.63**	0.65**	0.72**	1.00		
V5: Learning Culture Gap	-0.46**	-0.51**	-0.53**	-0.42**	1.00	
V6: Overall Performance	0.78**	0.73**	0.69**	0.62**	-0.55**	1.00

Based on Primary Data \*\* p < 0.01

All of the variables related to skill improvement show very high positive connections in the Pearson correlation matrix. Correlations between Personalisation Level and Overall Performance are the strongest ( $r = 0.78$ ,  $p < 0.01$ ), with Technical Competency and Compliance Knowledge following closely after ( $r = 0.73$  and  $0.69$ , respectively).

Organisational culture is the main barrier to digital learning effectiveness, as shown by the strong negative correlations between Learning Culture Gap (the lack of support from managers and learning infrastructure) and all performance variables, especially Overall Performance ( $r = -0.55$ ).

**Table 7:** Exploratory Factor Analysis (EFA) KMO, Bartlett's Test and Factor Loadings

Measure / Variable	Factor 1 (Learning Quality)	Factor 2 (Culture Gap)	Factor 3 (Modality Pref.)	Factor 4 (Org. Context)
KMO Measure of Sampling Adequacy	0.861			
Bartlett's Test of Sphericity (Sig.)	0.000*			
Eigenvalue	3.91	2.04	1.28	0.94
Variance Explained (%)	39.1	20.4	12.8	9.4
Cumulative Variance (%)	39.1	59.5	72.3	81.7
Technical Competency Improvement	0.826			
Compliance Knowledge Gain	0.798			
Customer Service Skill Uplift	0.771			
Manager Support Absence		0.848		
Learning-Performance Disconnect		0.811		
AI-Adaptive Modality Preference			0.784	
Microlearning Modality Preference			0.749	
Institutional Learning Culture				0.826
Role-Learning Alignment				0.783

Based on Primary Data \* Sig.@5%

As a result, factor analysis can be considered valid as the KMO value of 0.861 is higher than the cutoff of 0.60. The factorability of the correlation matrix is validated by the substantial results of Bartlett's Test of Sphericity ( $p = 0.000$ ). Out of the overall variance, 81.7% was explained by the four factors that were retrieved. With the greatest loadings on Technical Competency Improvement (0.826) and Compliance Knowledge Gain (0.798), Factor 1

(Learning Quality) dominates the model and accounts for 39.1% of the variation. Organisational enablement circumstances are validated as the second most important determinant of digital learning outcomes by Factor 2 (Culture Gap), which explains 20.4%. Factor 3, "Modality Preference," accounts for 12.8% of the total, whereas Factor 4, "Organisational Context," accounts for 9.4%.

**Table 8:** Multiple Regression Analysis Predictors of Overall Employee Performance Improvement through Digital Learning

Predictor Variable	B	Std. Error	Beta ( $\beta$ )	t-Value	Sig.
(Constant)	1.18	0.29	—	4.07	0.000
Digital Learning Modality	0.54	0.09	0.39	6.00	<b>0.000*</b>
Personalisation Perception	0.46	0.10	0.32	4.60	<b>0.000*</b>
Learning Culture Gap	-0.36	0.08	-0.25	-4.50	<b>0.000*</b>
Institutional Support Level	0.28	0.09	0.20	3.11	<b>0.002*</b>
Role-Learning Alignment	0.21	0.08	0.15	2.63	<b>0.009*</b>
Model Fit: $R = 0.824$ , $R^2 = 0.679$ , Adjusted $R^2 = 0.673$ , $F(5,314) = 140.62$ , $p = 0.000*$					

Based on Primary Data \* Sig.@5%

The adjusted  $R^2$  of 0.673 and the highly significant regression model ( $F(5,314) = 140.62$ ,  $p < 0.000$ ) show that the five predictors account for 67.3% of the variation in the overall improvement of employee performance. Personalisation Perception is the second most important factor, after Digital Learning Modality ( $\beta = 0.32$ ), which is the strongest predictor ( $\beta = 0.39$ ,  $p < 0.001$ ). The fact that the Learning Culture Gap has a substantial negative impact ( $\beta = -0.25$ ) proves that the biggest obstacle to the success of

digital learning is the presence of structural and managerial barriers. The statistical significance of all five predictors lends credence to the rejection of the null hypothesis  $H_{01}$ .

### Findings of The Study

1. The survey asserts that 67% of those who answered are aware or very aware of digital learning platforms in their banks and other financial organisations. This shows that employees are familiar with technology-

based skill development in Indian banking and financial services.

2. AI-Adaptive Personalised Learning (30%) and Microlearning (28%) are the most popular digital learning methods, making up 58% of all preferences. This shows that people who work in financial services are busy and prefer to learn on their phones. 3. 68% of those who said strongly agree or agree that digital learning has helped them learn more about technology and products and 64% think it has helped them do their work better overall.
3. It is shown that 62% of the people who answered said that digital learning led to a big or very big rise in performance. This is strong evidence that it works for Indian financial businesses.
5. The Chi-Square Test of Association ( $\chi^2 = 19.83$ ,  $df = 8$ ,  $p = 0.019$ ) demonstrates a significant link between the choice for digital learning mediums and the enhancement of employee performance. The largest improvement in performance was seen in AI-Adaptive Learning (65%), and the least improvement was seen in self-paced eLearning (47%). We do not accept the null hypothesis  $H_{02}$ .
4. The Pearson Correlation Matrix shows that all of the skill improvement variables are strongly linked to each other. Personalisation Level ( $r = 0.78$ ) is the most closely related to Overall Performance, followed by Technical Competency ( $r = 0.73$ ). The Learning Culture Gap has a negative relationship with all performance indicators, with Overall Performance being the strongest ( $r = -0.55$ ).
5. Exploratory Factor Analysis (KMO = 0.861, Bartlett's Test  $p = 0.000$ ) identified four latent factors: Learning Quality, Culture Gap, Modality Preference and Organisational Context, which accounted for 81.7% of the variance. Factor 1 (Learning Quality) is the most important, accounting for 39.1% of the variance.
6. The biggest predictor of an increase in employee performance is Digital Learning Modality ( $\beta = 0.39$ ), followed by Personalisation Perception ( $\beta = 0.32$ ). This is based on Multiple Regression Analysis (Adjusted  $R^2 = 0.673$ ,  $F(5,314) = 140.62$ ,  $p = 0.000$ ). The Learning Culture Gap has a considerable negative effect ( $\beta = -0.25$ ). All five predictors are significant, which means that the null hypothesis  $H_{01}$  is not true.

### Suggestions

Banks and other financial institutions should put money into AI-adaptive learning experience systems that offer personalised skill routes that are in line with the KPIs for each function. Digital Learning Modality is the best predictor of performance improvement ( $\beta = 0.39$ ) and AI-Adaptive Learning has the best performance outcomes (65%). Therefore, modality quality should be the main focus of institutional L&D strategy. Personalisation Perception is the second strongest predictor of performance ( $\beta = 0.32$ ), so companies should put money into deep personalisation infrastructure, such as behavioural skill data platforms, contextual AI engines, and real-time career pathway adaptation systems, to make digital learning seem more relevant to employees. The Learning Culture Gap has a severe negative influence on overall performance ( $r = -0.55$ ) and a significant negative effect on performance ( $\beta = -0.25$ ). This means that banks and other financial organisations

need to approach cultural and managerial enablement as equally important as investing in technology. It is important to train line managers in learning coaching, including learning talks in performance review cycles, and provide employees time to learn. The four-factor EFA framework should be used to help create L&D strategies. Investing in Learning Quality (Factor 1, 39.1% variance) will give the best results. Culture Gap management (Factor 2, 20.4% variance) should be seen as an equally important strategic priority, not a secondary one. Microlearning should be the default way for operational roles, including relationship managers, compliance officers, and branch operations workers, to learn when they can't take long breaks from learning. Institutions ought to transform legacy SCORM content into five-minute modular formats and implement them through mobile-first platforms equipped with push notification functionality. Policymakers and industry regulators should create a framework for digital learning standards in Indian financial institutions. This should include minimum requirements for personalisation, learning data analytics, and measuring the transfer of learning to performance. The Chi-Square finding that modality type significantly affects the amount of performance improvement experienced by employees should guide this work.

### Conclusion

Digital learning has become one of the most strategically important skills for modern banks, allowing for personalised, ongoing, and performance-linked skill development that wasn't possible with traditional classroom teaching. This study has shown, using a strict multi-method analytical framework, that Indian financial services workers are generally aware of digital learning systems, strongly prefer AI-adaptive and microlearning modes, and report significantly improved skill and performance outcomes as a result of structured digital learning exposure. The Chi-Square study shows that there is a strong link between preference for digital learning modalities and the amount of performance improvement. This proves that the quality of the outcome is determined by the sophistication of the modality, not only the digital delivery. The Pearson Correlation Analysis validates robust positive correlations among all skill enhancement dimensions, whereas the Learning Culture Gap serves as the most consistent negative moderator across all variables. This underscores that technological investment, devoid of cultural and managerial facilitation, is inadequate to achieve the full performance potential of digital learning. Exploratory Factor Analysis yields a four-factor structural model Learning Quality, Culture Gap, Modality Preference, and Organisational Context, accounting for 81.7 percent of the total variance in employee performance enhancement, thereby providing a validated conceptual framework for subsequent longitudinal and experimental investigations in this field. Multiple Regression Analysis indicates that Digital Learning Modality ( $\beta = 0.39$ ) and Personalisation Perception ( $\beta = 0.32$ ) are the key positive drivers, whereas Learning Culture Gap ( $\beta = -0.25$ ) is the principal inhibitor of performance. The long-term success of digital learning investments in banks will depend on more than just the platforms' technological sophistication. It will also depend on the banks' ability to create learning cultures where skill development is a normal part of the work process, measured

as rigorously as financial performance, and directly linked to each employee's career advancement. Financial institutions that include these ideas in their digital learning strategy would be well positioned to harness the complete commercial and human potential of this technology within India's swiftly developing and increasingly intricate financial sector.

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