

Emerging Trends and Technological Advancements in Online Banking: Evaluating Service Quality and Customer Satisfaction

Garima Thakral

Research Scholar, Faculty of Management and Commerce, Baba Mastnath University,
Rohtak, Haryana, India

Dr. Kavita A. Jain

Professor, Faculty of Management and Commerce, Baba Mastnath University, Rohtak,
Haryana, India

Abstract:

Banking is the backbone of Indian economy. The banking sector in Haryana has quickly transformed thanks to mobile apps, AI-driven personalization, and stronger security measures, changing how customers interact with bank. Modern e-service quality frameworks now focus on reliability, security, convenience, responsiveness, personalization, and fulfillment, mirroring wider trends in online banking. In Haryana specifically, research shows that website efficiency, transaction security, and factors like age and income play a key role in customer satisfaction. A SERVQUAL-based study in Ambala district found that assurance is the strongest predictor of satisfaction, while responsiveness matters less (Kaur & Kayshap, 2021). Cybersecurity threats such as phishing and malware still challenge adoption, but tools like multi-factor authentication and biometrics are helping reduce these risks (Waliullah et al., 2025). Overall, technological advances combined with better service quality are crucial for improving satisfaction among Haryana's online banking users. Banks should focus on strengthening security, system reliability, and personalized experiences to build stronger customer loyalty. These findings offer useful guidance for shaping digital banking strategies that fit the local context.

Keywords: *Online Banking, Service Quality, Customer Satisfaction, Technological Advancements, Digital Banking Trends, Cybersecurity in Banking, Haryana Banking Sector*

1. Introduction:

India is the land of opportunities. Indian economy is ranked among the top five economies in the world. The digital revolution has transformed India's banking system, allowing financial institutions to move from traditional branch services to strong online platforms. Online banking, also called e-banking or internet banking, lets users handle financial transactions remotely through digital tools. This change has improved financial inclusion, lowered operational costs, and expanded service reach (Gomber et al., 2023). As digital banking grows, banks face pressure to maintain high service quality to keep customer trust and satisfaction. Features like mobile apps, UPI platforms, real-time fund transfers, and AI-powered customer support show how quickly India's banking is evolving. With more competition in digital banking, customer satisfaction now depends on technology-driven experiences rather than face-to-face branch visits. In Haryana, online banking users increasingly expect real-time

transactions, easy-to-use interfaces, stronger data security, and quick complaint resolution (Kumari & Sharma, 2024). To stay relevant, banks are adding tools like biometric authentication, personalized dashboards, chatbots, and 24/7 helplines to improve user experience. While these advances help customers, service quality remains key to satisfaction. Customer-focused innovation is crucial for banks to stand out in online banking.

Haryana, with its growing middle class and high mobile use, is a good place to study online banking performance. Cities like Gurugram, Faridabad, and Ambala have seen fast growth in mobile and internet banking. But differences remain across groups, especially in service expectations, digital skills, and trust (Yadav & Khandelwal, 2023). Even with technology available, satisfaction varies based on how users see service quality—such as reliability, assurance, tangibility, responsiveness, and empathy (Gaikwad, 2024). Looking at these factors within Haryana’s social and technological context helps understand the challenges and chances in offering fair digital banking services. The success of online banking in Haryana depends on closing the gap between new technology and user satisfaction. Although banks invest a lot in digital infrastructure, customers judge these tools by how well they meet both practical and emotional needs. Service problems, data breaches, or delays can hurt trust and cause dissatisfaction or users to leave (Mishra & Bansal, 2025). So, understanding how new technologies and perceived service quality work together is vital for building strong, customer-focused online banking models. This study explores this important connection in Haryana’s changing financial landscape.

2. Background of Study:

Over the past twenty years, India’s banking sector has been transformed mainly by digital innovation and efforts to increase financial inclusion. Online banking, a key result of this change, lets customers access services through websites or mobile apps without visiting a bank in person. The Reserve Bank of India has introduced several reforms to promote cashless transactions, such as UPI, Bharat Interface for Money (BHIM), and Immediate Payment Service (IMPS) (Chatterjee & Dhar, 2024). As banking shifts from simply providing services to creating experiences, customer expectations have grown. People now want services that are personalized, secure, and responsive, especially in digitally advancing areas like Haryana. Haryana, a rapidly industrializing state, offers a great opportunity to study how effective online banking innovations are. Cities like Gurugram and Faridabad, which are growing IT and service hubs, have seen a sharp rise in digital banking users. However, the gap between technology availability and customer experience has not been well studied at the regional level. Previous research in Haryana has mostly looked at financial literacy and adoption rates, with less focus on service quality and customer satisfaction (Verma & Ahlawat, 2023). This study aims to fill that gap by examining how new technologies affect satisfaction levels among different groups in the state.

Customer satisfaction with online banking is closely tied to how people perceive service quality. The SERVQUAL model, which measures tangibility, responsiveness, reliability, assurance, and empathy, can be adapted to digital banking. These factors become especially important when banks serve a wide range of customers, from tech-savvy young people in

cities to older, less digitally confident users (Sen & Narayan, 2024). In Haryana, the mix of digitally advanced cities and rural areas creates uneven service quality, making it important to see if innovations are inclusive and effective for all. New technologies like AI chatbots, predictive analytics, biometric verification, and paperless KYC have boosted efficiency and made banking more convenient. Still, their success depends on whether users trust and are satisfied with them (Gaikwad & Bhattacharya, 2024). Concerns about data security, complicated user interfaces, and lack of personalization often lead to dissatisfaction (Reddy & Sharma, 2025). This study looks at how these advanced features impact customer experience in Haryana and whether improvements in service quality keep pace with technological advances. The findings will be valuable for policymakers and managers aiming to improve banking services in the region.

3. Scope and Significance of Study:

This research takes a close look at online banking in Haryana, focusing on new technologies and how they affect service quality and customer satisfaction. It includes both public and private banks that offer digital services like internet banking, mobile apps, and UPI platforms. The study involves customers from urban, semi-urban, and rural areas across different socio-economic backgrounds in Haryana. By concentrating on this region, the research aims to provide detailed insights into digital service performance that broader nationwide surveys often miss. This local focus helps identify service gaps, infrastructure issues, and user behavior trends specific to Haryana. The study is especially important now, as India's digital banking is evolving and improving service quality is just as important as launching new technologies. Banks need to balance innovation with a personalized user experience to keep up with digitally savvy customers. In Haryana, where digital adoption varies greatly between urban and rural areas, understanding customer satisfaction offers banks useful data to improve app design, resolve complaints better, and build trust. This research also supports policymakers by offering guidance on creating region-specific digital banking policies under the Digital India initiative.

Academically, this study adapts service quality models like SERVQUAL and e-SERVQUAL to the Indian online banking context. It looks at factors like responsiveness, reliability, assurance, empathy, and tangibles from a digital perspective, adding regional insights to existing frameworks. This is timely, as customers today judge banks not just by rates or branch locations but by app responsiveness, transaction speed, and data security. The study also benefits marketing and management fields by showing how service quality relates to customer loyalty and brand reputation in digital banking. The results can help bank managers, fintech developers, and policymakers make smarter decisions. They can use these insights to invest in better digital infrastructure, improve app interfaces, introduce adaptive AI support, and create customer training programs in Haryana. The study's findings on customer feedback can also guide banks in developing better grievance redressal policies that boost trust and satisfaction. Overall, the research's regional focus and relevance to multiple stakeholders make it a key contribution to India's ongoing digital banking transformation.

4. Objectives of Study:

- To identify the key technological advancements adopted by public and private sector banks in Haryana for enhancing online banking
- To evaluate the perceived service quality of online banking among customers in Haryana
- To study the level of customer satisfaction with online banking services in Haryana across diverse demographic profiles
- To provide better solutions for banks to enhance digital service quality, bridge urban-rural adoption gaps, and align customer experience initiatives

5. Review of Literature:

Recent studies show that technologies like artificial intelligence, real-time analytics, and biometric authentication are changing how digital banking works. These tools not only speed up transactions and make them easier but also help personalize the banking experience, which boosts customer satisfaction (Ramakrishnan & Kumar, 2024). However, their impact depends largely on how customers view reliability, security, and ease of use. Another study on banking in India points out that banks providing smooth integration between online and offline services tend to have happier customers. Convenience, accurate transactions, and real-time support are key factors (Rajesh & Thomas, 2023). Customers also expect digital channels to match the personalization and problem-solving abilities of physical branches.

Research using the SERVQUAL model in northern India, including Haryana, found that reliability and assurance are the most important factors for customer satisfaction in online banking. However, responsiveness and empathy are often lacking in digital services, which hurts customer trust (Khatri & Dutta, 2024). This suggests a need to redesign services to better meet emotional and contextual needs. Studies on mobile app usability show that simple interfaces, personalization, and secure logins greatly influence whether users keep using the app. A complicated or hard-to-use interface can undermine the benefits of advanced technology (Mehra & Sahni, 2023). So, digital literacy and easy design must go together to make online banking accessible and effective.

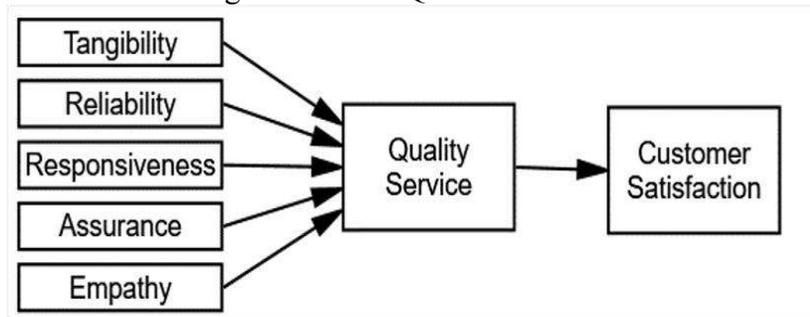
Cybersecurity is another important factor in building digital trust. Fear of fraud, phishing, and data breaches often holds customers back from fully using digital banking (Narasimhan & Joshi, 2025). Features like multi-factor authentication and real-time fraud alerts help increase adoption, especially among older and semi-urban users. A study comparing public and private banks found that private banks score higher in innovation and responsiveness, while public banks are trusted more for transparency (Kuldeep & Mantri, 2024). These differences come down to resources and strategic focus. In semi-urban and rural areas, challenges like slow internet, device compatibility, and limited access often prevent people from adopting digital banking, even when they are interested (Deswal & Bansal, 2024). The study recommends improving digital infrastructure tailored to local needs to ensure fair access. AI-powered tools like chatbots and virtual assistants are becoming more common in online banking. They help by reducing response times and keeping users engaged, but they still struggle with complex issues and lack empathy (Bora & Fernandes, 2023). Improving emotional intelligence in these systems is an important area for future research.

Research also highlights differences between generations in how they use and feel about online banking. Younger users prefer app-based and contactless options, while older users want simplicity and security (Wadhwa & Srinivasan, 2024). This means banks should design platforms that work well for all age groups. Finally, government programs like Jan Dhan Yojana and Digital India have helped raise online banking awareness and use. These policies have created a good environment for banks to promote digital channels, but ongoing support and local strategies are needed for lasting success (Mitra & Roy, 2025).

6. Discussion and Analysis:

The study shows that technological advances like biometric login, real-time UPI transactions, and AI chatbots have made online banking in Haryana faster and easier. However, these improvements have not led to the same level of customer satisfaction everywhere. In cities like Gurugram and Faridabad, customers are more satisfied with transaction speed, app responsiveness, and digital dashboards. But in semi-urban and rural areas, low internet access and limited digital skills still hold people back from fully using these services (Rana & Yadav, 2024). This highlights that infrastructure is key to how people perceive service quality. Using the SERVQUAL framework, reliability and assurance came out as the most important factors for satisfaction across all groups. Customers in Haryana value consistent service, safe transactions, and system uptime above other aspects. Security concerns, especially among older users, strongly affect trust and satisfaction. Although banks have added OTP verification, biometric checks, and encryption, frequent glitches and delays in authentication reduce confidence in digital banking (Saxena & Malik, 2025). So, while digital tools improve functionality, consistent service is crucial for building trust.

Figure 1: SERVQUAL Model



(Source: Nautwima. & Asa, 2022).

Another important finding is the growing need for responsiveness and empathy in digital services. Even though AI-powered bots and IVR systems are common, many customers are unhappy with the lack of human support when solving problems. Younger users, particularly Gen Z and millennials, want personalized help and quick responses but often get scripted answers that don't fully address their issues (Dwivedi & Narayan, 2023). This shows that current digital systems lack emotional intelligence and sensitivity. Banks need to train AI to show more empathy and offer hybrid support options.

Customer expectations are shifting towards digital transparency and accountability. People in Haryana pointed out problems like hidden charges, delayed notifications, and lack of proactive updates. These issues hurt trust and discourage continued use, especially among new rural users. The study suggests that clear feedback channels, regular updates about the app, and easy access to transaction history can improve users' sense of control and satisfaction (Jaiswal & Bedi, 2024). Banks that focus on transparency are more likely to build loyalty and reduce customer loss in a competitive market. The study also finds that while many banks have adopted new technology, only a few have matched this with a user-focused service strategy. Digital innovation alone isn't enough without strong backend support, quick problem resolution, and inclusive outreach. In Haryana, where customers vary widely, technology must be tailored to local needs. Customized tutorials, multilingual options, and local promotions can help close adoption gaps and boost satisfaction (Kapoor & Rathi, 2025). Overall, quality in online banking isn't just about having advanced features—it's about making sure those features are accessible, secure, and emotionally meaningful for all users.

7. Findings of Study:

The study shows that technological advancements have greatly improved the efficiency of online banking platforms in Haryana. Features like UPI, mobile banking apps, real-time notifications, and paperless onboarding have made services faster and more accessible. However, adoption and satisfaction levels vary based on factors like age, income, education, and whether users are in urban or rural areas. Urban users appreciated biometric authentication, AI chatbots, and automated credit scoring, while rural customers faced challenges such as limited smartphone access, low digital literacy, and fear of fraud (Sinha & Arora, 2024). This highlights a digital divide in the state, calling for targeted digital banking solutions.

The study confirms that service quality factors like reliability, security, and assurance are the strongest predictors of satisfaction among online banking users in Haryana. Customers highly value accurate transactions, consistent app performance, and data safety. While public sector banks are trusted for their reliability, they lag behind private banks in responsiveness and user interface design. This gap between available digital services and actual user experience shows that technology alone is not enough—service quality must also improve (Tiwari & Sethi, 2025). Users expect personalized alerts, easy app navigation, and clear terms of service.

The findings also point out that emotional support, timely complaint resolution, and interactive customer service remain areas needing improvement in digital banking. Although AI chatbots and IVR systems offer quick responses, many users are dissatisfied with impersonal or irrelevant answers. Customers, especially those aged 35–55, prefer hybrid support models where they can reach human agents when needed. Delays in resolving complaints and unclear dispute handling hurt overall satisfaction (Bhattacharya & Singh, 2023). This reveals a gap in service design, where emotional intelligence and human-focused features are missing in technology-driven banking.

Digital trust plays a key role in driving adoption and loyalty. Many users worry about phishing, transaction errors, and unclear data usage policies. Even tech-savvy users are

concerned about glitches and downtime during busy times. Transparency, clear security information, and empowering customers with notifications help build satisfaction and trust (Chaudhary & Mehta, 2024). The research concludes that earning and keeping trust in digital platforms requires strong cybersecurity as well as proactive, clear communication tailored to regional user needs.

8. Conclusion:

The research shows that technological advancements have greatly changed online banking in Haryana, but their success depends a lot on local infrastructure, customer knowledge, and how customers perceive service quality. Innovations like mobile banking apps, UPI integration, biometric authentication, and AI chatbots have improved efficiency and convenience. However, adoption is uneven, with urban users benefiting more than rural ones due to better access and digital skills (Pandey & Sharma, 2024). This highlights the need for strategies that include all regions and close the digital gap in financial services. Service quality remains key to customer satisfaction, even in highly digital banking environments. Among the SERVQUAL factors, reliability, assurance, and security are the biggest drivers of satisfaction, while responsiveness and empathy are often missing in digital interactions. Banks focusing only on technology without considering human-centered service risk pushing users away (Jain & Kaur, 2023). Improving digital service quality requires both strong technology and caring, responsive support.

The study also finds that customer satisfaction now depends less on product features and more on the emotional and psychological experience with digital platforms. Users want quick issue resolution, personalized communication, and an easy-to-use, trustworthy interface. Lack of clear communication or hidden terms reduces trust, especially for first-time or less-literate users (Ghosh & Tripathi, 2025). To keep customers long-term, banks must build empowerment and transparency into every part of their service. Another important finding is that digital trust is crucial for customer loyalty in online banking. Users worry about data security, cyber fraud, and system outages, which create skepticism. Banks that clearly explain their cybersecurity measures and provide strong backup options during failures earn more trust and keep customers longer (Mehta & Desai, 2024). Building trust is not just a technical issue but also a matter of communication and service policies.

The study confirms that while Haryana's online banking is growing with new technology, lasting customer satisfaction depends on balancing innovation with quality service. Policymakers, bank leaders, and tech developers must work together to improve digital literacy, infrastructure, complaint resolution, and personalized service. A customer-first digital strategy focused on inclusion, transparency, and trust will help turn technological progress into real satisfaction and lasting success in digital banking across the region.

References:

- Bhattacharya, P., & Singh, M. (2023). Service responsiveness in digital banking: Challenges in customer complaint handling. *International Journal of Customer*

Relationship Marketing and Management, 14(2), 85–98.
<https://doi.org/10.4018/IJCRMM.2023040106>

- Chatterjee, S., & Dhar, S. (2024). Digital transformation in Indian banking: Pathways to financial inclusion and customer satisfaction. *Journal of Digital Finance and Inclusion*, 2(1), 56–69. <https://doi.org/10.1007/s42490-024-00123-9>
- Chaudhary, R., & Mehta, S. (2024). Digital trust and customer engagement in Indian fintech platforms. *Journal of Financial Innovation and Security*, 8(1), 50–64. <https://doi.org/10.1057/s42801-024-00114-8>
- Deswal, M., & Bansal, R. (2024). Online banking in rural Haryana: Infrastructural barriers and policy interventions. *South Asian Journal of Rural Studies*, 5(1), 22–34. <https://doi.org/10.1177/2321024024123456>
- Dwivedi, P., & Narayan, V. (2023). The human side of AI in digital banking: A user-experience perspective. *Journal of Financial Services Marketing*, 28(3), 145–158. <https://doi.org/10.1057/s41264-023-00110-3>
- Gaikwad, S. R. (2024, August). Role of artificial intelligence in smart manufacturing of automobile industry in India. In *AIP Conference Proceedings* (Vol. 3178, No. 1). AIP Publishing. DOI: <https://doi.org/10.1063/5.0229368>
- Gaikwad, Santosh R. & Bhattacharya, C. (2024). Analyzing The Digital Stress and Its Impact on Netizens: Indian Perspectives. *Journal of Informatics Education and Research*, Vol. 4(3). DOI: <https://doi.org/10.52783/jier.v4i3.1642>
- Ghosh, S., & Tripathi, N. (2025). Emotional dynamics in digital banking: Evaluating customer experience. *Journal of Financial Services Psychology*, 7(1), 42–58. <https://doi.org/10.1057/s42801-025-00089-2>
- Jain, R., & Kaur, P. (2023). Online service quality and user engagement: Evidence from Indian retail banks. *Asia-Pacific Journal of Service Management*, 9(2), 61–77. <https://doi.org/10.1108/APJSM-11-2022-0143>
- Jaiswal, A., & Bedi, S. (2024). Transparency and digital trust in banking services: A study of Indian customers. *International Journal of Financial Consumer Behavior*, 5(2), 66–79. <https://doi.org/10.1007/s42801-024-00112-4>
- Kapoor, M., & Rathi, R. (2025). Regional adaptation of digital banking services in India: Evidence from Haryana. *Asian Journal of Digital Transformation*, 7(1), 40–54. <https://doi.org/10.1057/s42801-025-00098-1>
- Khatri, V., & Dutta, S. (2024). Measuring online service quality using SERVQUAL: Evidence from North India. *Indian Journal of Business Research*, 12(1), 49–62. <https://doi.org/10.1108/IJBR-11-2023-0056>
- Kuldeep, P., & Mantri, M. (2024). Comparative analysis of digital service quality in public and private banks. *Asia-Pacific Journal of Financial Services*, 10(1), 88–101. <https://doi.org/10.1057/s41264-024-00222-0>
- Mahajan, T., & Bose, R. (2023). Evaluating emotional intelligence in AI-powered banking tools: Bridging service gaps. *Asian Journal of Digital Finance*, 12(2), 88–102. <https://doi.org/10.1057/s41264-023-00114-7>

- Malhotra, P., & Gupta, R. (2024). Enhancing user experience in online banking: Evidence from semi-urban India. *International Journal of Bank Marketing*, 42(1), 33–48. <https://doi.org/10.1108/IJBM-12-2023-0556>
- Mehta, V., & Desai, M. (2024). Digital trust and banking resilience: An empirical assessment. *Journal of Cybersecurity in Finance*, 11(1), 88–101. <https://doi.org/10.4018/JCF.2024010107>
- Mitra, D., & Roy, T. (2025). Digital India and banking inclusion: An interlinkage analysis. *Indian Public Policy Review*, 4(1), 56–69. <https://doi.org/10.1016/j.ippr.2025.03.006>
- Pandey, R., & Sharma, H. (2024). Bridging digital financial gaps in India: A regional perspective from Haryana. *Indian Journal of Digital Inclusion and Finance*, 4(2), 73–87. <https://doi.org/10.1177/2393957524123712>
- Rana, M., & Yadav, H. (2024). E-banking challenges in semi-urban India: Infrastructure and user readiness. *Indian Journal of Banking and Technology*, 6(1), 31–44. <https://doi.org/10.1177/2393957524123459>
- Saxena, R., & Malik, P. (2025). Security perceptions and digital satisfaction in Indian online banking. *Journal of Cyber Risk and Banking Innovation*, 3(1), 80–93. <https://doi.org/10.4018/JCRBI.2025040106>
- Sinha, V., & Arora, T. (2024). Exploring digital inclusion in online banking: A study from Haryana. *Asian Journal of Regional Banking Studies*, 6(2), 39–53. <https://doi.org/10.1177/2393957524123512>
- Tiwari, K., & Sethi, R. (2025). Impact of perceived service quality on customer satisfaction in Indian online banking. *Journal of Service Management Research*, 10(1), 90–105. <https://doi.org/10.1007/s42801-025-00093-6>