

SHAPING THE FUTURE OF E-BANKING: STRATEGIC ROLES OF HR PROFESSIONALS IN ADVANCING E-BANKING DEVELOPMENT IN PAKISTAN'S BANKING SECTOR

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Abstract

The rapid diffusion of electronic banking (e-banking) technologies has transformed the operational models, service delivery mechanisms, and competitive dynamics of the banking sector worldwide. In Pakistan, banks are increasingly investing in digital platforms such as mobile banking, internet banking, and branchless banking to enhance financial inclusion, customer convenience, and operational efficiency. However, despite significant technological investments, many e-banking initiatives face challenges related to employee readiness, service quality inconsistencies, resistance to organizational change, and gaps in digital capabilities. These challenges highlight the critical but often underexplored role of human resource (HR) professionals in shaping and sustaining e-banking development. This study examines the strategic roles of HR professionals in advancing e-banking development within Pakistan's banking sector. Drawing on strategic human resource management and digital transformation perspectives, the research investigates how HR-driven practices such as digital talent acquisition, continuous training and development, performance management, change leadership, and culture building contribute to the successful implementation and growth of e-banking services. The study proposes that HR professionals act not merely as administrative support functions but as strategic enablers who align human capital capabilities with digital banking objectives. Using a quantitative research design, data are collected from employees and managers working in commercial banks across Pakistan. Structural equation modeling is employed to analyze the relationships between strategic HR roles, employee digital readiness, organizational change readiness, and e-banking development outcomes, including service quality, system reliability, customer satisfaction, and innovation capability. The findings are expected to demonstrate

that strategic HR involvement has a significant positive impact on e-banking development, both directly and indirectly through the mediation of digital culture and employee readiness. The study contributes to the literature by shifting the focus of e-banking research from a predominantly technology-centric view to a human-centered strategic perspective. It provides empirical evidence from a developing economy context, where digital banking transformation is shaped by unique institutional, cultural, and skill-related constraints. From a practical standpoint, the findings offer actionable insights for banking executives and policymakers, emphasizing the need to integrate HR strategy into digital banking initiatives to ensure sustainable e-banking growth in Pakistan's evolving financial landscape.

1- Introduction:

The global banking industry is undergoing an unprecedented transformation driven by rapid advancements in information and communication technologies, data analytics, and digital service platforms. Electronic banking (e-banking), encompassing mobile banking, internet banking, automated service channels, and branchless banking solutions, has become a strategic cornerstone of modern financial institutions. By enabling real-time transactions, reducing operational costs, and enhancing customer convenience, e-banking has fundamentally altered traditional banking models and intensified competition within the financial services sector. As digital banking becomes increasingly embedded in organizational strategies, banks are compelled to move beyond mere technological adoption toward holistic digital transformation that integrates people, processes, and culture. In developing economies, e-banking assumes even greater importance due to its potential to enhance financial inclusion, improve service accessibility, and support economic development. Pakistan's banking sector has made notable progress in this regard, supported by increased smartphone penetration, expanding internet infrastructure, regulatory encouragement for branchless banking, and growing customer acceptance of digital financial services [1]. Commercial banks in Pakistan have invested heavily in mobile banking applications, internet banking platforms, digital payment systems, and electronic customer onboarding processes. These initiatives aim to reduce dependency on physical branches, improve

operational efficiency, and cater to a digitally evolving customer base. Despite these investments, the outcomes of e-banking initiatives across Pakistani banks remain uneven. While some institutions have successfully leveraged digital platforms to enhance service quality and innovation, others continue to struggle with low utilization rates, inconsistent service performance, system reliability issues, and limited customer satisfaction [2]. Emerging evidence suggests that these challenges cannot be attributed solely to technological limitations. Instead, organizational and human factors such as employee resistance to change, inadequate digital skills, limited training opportunities, weak performance incentives, and misalignment between digital strategy and organizational culture play a decisive role in shaping the success or failure of e-banking initiatives. Within this context, human resource (HR) professionals occupy a central yet often underestimated position in the digital transformation process. HR functions are responsible for acquiring digital talent, developing employee competencies, managing performance systems, facilitating organizational change, and fostering a culture that supports innovation and learning [3]. Strategic human resource management theory emphasizes that human capital is a critical source of sustained competitive advantage, particularly in knowledge-intensive and technology-driven industries such as banking. Accordingly, HR professionals have the potential to act as strategic partners who align workforce capabilities with e-banking objectives and ensure that digital transformation initiatives are effectively implemented at the employee level.

However, much of the existing e-banking literature has adopted a predominantly technology-centric or customer-centric orientation. Prior studies have extensively examined factors such as system quality, perceived usefulness, ease of use, trust, security, and customer adoption intentions. While these perspectives offer valuable insights, they provide a limited understanding of the internal organizational mechanisms that support e-banking development. In particular, the strategic role of HR professionals in shaping employee readiness, managing change, and embedding digital culture has received relatively little empirical attention especially in developing economy contexts like Pakistan. Recent research in digital transformation and strategic HRM has begun to highlight the importance of employee digital readiness and organizational change capability as

key mediators between digital strategy and performance outcomes [4]. Digital readiness reflects employees’ skills, confidence, and willingness to engage with digital systems, while organizational change readiness captures the extent to which institutions are prepared to adopt new ways of working. HR-driven practices such as continuous training, performance-linked incentives, leadership development, and culture-building initiatives are critical in enhancing both forms of readiness. Nevertheless, empirical models that explicitly link strategic HR roles to e-banking development outcomes through these mediating mechanisms remain scarce. To clarify the positioning of the present study, Table 1 summarizes key strands of prior e-banking research and highlights the specific gaps addressed by this study.

Table 1: Summary of Prior E-Banking Research and Identified Gaps

Research Focus	Key Emphasis in Prior Studies	Limitations in Existing Literature	Focus of the Present Study
Technology adoption	System quality, usability, security, perceived usefulness	Overemphasis on technical systems; limited organizational insight	Integrates technology outcomes with HR-driven organizational capabilities
Customer perspective	Customer satisfaction, trust, adoption intention	Neglects internal employee and managerial factors	Examines employee readiness and HR strategy as precursors to service outcomes
Organizational studies	Digital strategy and IT infrastructure	Limited attention to HR as a strategic actor	Positions HR professionals as strategic enablers of e-banking development
HRM research	General HR practices and firm performance	Rarely linked to digital banking contexts	Explicitly connects HR practices to e-banking outcomes
Developing economy context	Regulatory and infrastructure challenges	Limited empirical evidence on human-centered digital transformation	Provides empirical evidence from Pakistan’s banking sector

Building on this gap, the present study investigates the strategic roles of HR professionals in advancing e-banking development within Pakistan’s banking sector. Drawing on strategic human resource management and digital transformation perspectives, the study examines how HR-driven practices such as digital talent acquisition, training and development,

performance management, change leadership, and organizational culture building shape employee digital readiness and organizational change readiness. In turn, these factors are proposed to influence key e-banking development outcomes, including service quality, system reliability, customer satisfaction, and innovation capability. Methodologically, the study adopts a quantitative

research design and collects data from employees and managerial personnel working in commercial banks across Pakistan. Structural equation modeling is employed to test the proposed relationships and to examine both direct and indirect effects among strategic HR roles, employee readiness constructs, and e-banking outcomes [5]. This approach enables a comprehensive assessment of the mechanisms through which HR strategy contributes to digital banking success. This research makes several important contributions. First, it advances the e-banking literature by shifting attention from a narrow technology-centric perspective to a broader human-centered strategic framework. Second, it enriches strategic HRM scholarship by empirically linking HR roles to digital transformation outcomes in the banking sector. Third, by focusing on Pakistan, the study provides context-specific insights from a developing economy characterized by institutional, cultural, and skill-related constraints. Finally, the findings offer practical guidance for banking executives and policymakers, underscoring the necessity of integrating HR strategy into e-banking initiatives to ensure sustainable digital transformation and long-term competitive advantage.

2- Electronic Banking and Digital Transformation in the Banking Sector:

Electronic banking (e-banking) refers to the provision of banking products and services through electronic and digital channels, including internet banking portals, mobile banking applications, automated teller machines (ATMs), point-of-sale systems, and branchless banking platforms. Over the past two decades, e-banking has evolved from a supplementary service channel into a core component of banks' strategic and operational models. This evolution has enabled banks to offer round-the-clock services, reduce reliance on physical branches, lower transaction and operational costs, and improve speed, accuracy, and convenience in financial service delivery. Prior research emphasizes that e-banking should not be viewed solely as a technological upgrade but rather as a multidimensional digital transformation process. Digital transformation in

banking involves the integration of digital technologies with organizational processes, governance structures, human capital, and customer engagement mechanisms [6]. As a result, e-banking initiatives frequently require fundamental changes in internal workflows, decision-making processes, risk management practices, and service delivery models. Banks that successfully manage these changes are better positioned to enhance competitiveness, respond to evolving customer expectations, and sustain long-term performance. In both developed and developing economies, e-banking has been widely recognized as a key driver of competitiveness and financial inclusion. Digital banking platforms allow financial institutions to reach previously underserved populations, particularly in geographically dispersed or rural areas where physical banking infrastructure is limited. Empirical studies consistently report positive associations between e-banking adoption and outcomes such as operational efficiency, service quality, customer satisfaction, and cost optimization [7]. However, the magnitude of these benefits varies significantly across institutions, suggesting that technological deployment alone does not guarantee successful e-banking development. An emerging stream of literature argues that organizational readiness plays a critical role in shaping e-banking outcomes. Organizational readiness encompasses employees' digital skills, openness to change, managerial support, interdepartmental coordination, and alignment between digital strategy and organizational culture. Banks with similar technological infrastructures often exhibit markedly different e-banking performance levels due to differences in internal capabilities and human resource practices. Consequently, employee competence, training effectiveness, leadership commitment, and cultural support have been identified as decisive factors influencing the success of digital banking initiatives [8]. In the context of Pakistan, the banking sector has experienced rapid growth in digital service offerings over the past decade. Regulatory encouragement, increased smartphone penetration, improved internet connectivity, and

the expansion of branchless banking models have accelerated the adoption of mobile and internet banking services. Commercial banks have introduced digital onboarding, mobile wallets, real-time fund transfers, and electronic payment solutions to enhance customer convenience and support financial inclusion goals. Despite these advancements, e-banking adoption and performance remain uneven across banks and customer segments. Several challenges continue to constrain the full realization of e-banking benefits in Pakistan. These include inconsistent service quality across digital channels, limited innovation in product offerings, system reliability concerns, and varying levels of employee preparedness to manage digital services. Such challenges indicate

the presence of internal organizational constraints rather than purely technological deficiencies [9]. In particular, insufficient employee training, resistance to digital change, weak performance incentives, and limited strategic involvement of human resource functions can undermine the effectiveness of e-banking initiatives. These observations reinforce the argument that e-banking development is as much a human and organizational challenge as it is a technological one. To clarify how digital banking transformation extends beyond technology adoption, Table 2 summarizes key dimensions of e-banking and highlights the organizational implications emphasized in prior research.

Table 2: Dimensions of Electronic Banking and Their Organizational Implications

Dimension	Description	Key Organizational Implications
Digital channels	Mobile banking, internet banking, ATMs, branchless banking	Requires employee capability to support and manage multiple service platforms
Process automation	Digital transaction processing and service delivery	Demands workflow redesign and employee adaptability
Service quality	Reliability, responsiveness, and consistency of digital services	Depends on employee competence and cross-functional coordination
Customer engagement	Digital interaction and relationship management	Requires service orientation and digital communication skills
Innovation capability	Development of new digital products and services	Relies on learning culture and HR-supported skill development

The interaction between technological systems and organizational capabilities in e-banking development is illustrated in Figure 1, which conceptualizes e-banking as an outcome of

integrated technological, organizational, and human resource elements rather than isolated IT investments.

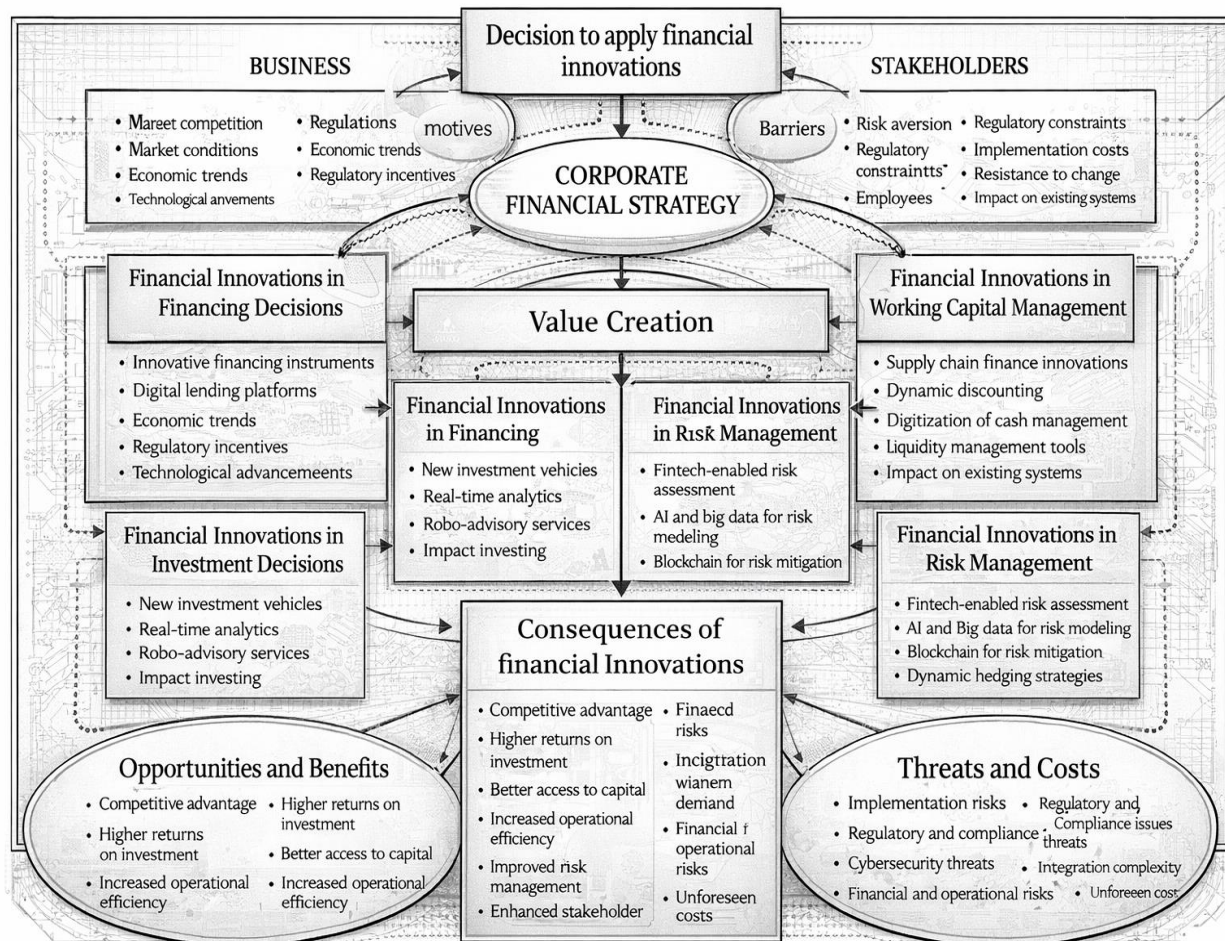


Figure 1: Conceptual overview of electronic banking as an integrated digital transformation process.

Overall, the literature suggests that while digital technologies form the backbone of e-banking systems, their effective utilization depends heavily on internal organizational and human resource capabilities. In developing economy contexts such as Pakistan, where institutional constraints and skill gaps are more pronounced, the strategic management of human capital becomes particularly critical. This perspective provides the foundation for examining the strategic role of HR professionals in enabling employee readiness, managing organizational change, and ultimately advancing sustainable e-banking development.

3- Strategic Roles of HR Professionals in E-Banking Development:

The successful development of e-banking systems extends beyond technological deployment and requires deliberate alignment between digital strategies and human capital capabilities. Within this context, human resource (HR) professionals play a critical strategic role by designing and implementing workforce practices that enable employees to support, operate, and continuously improve digital banking services. Strategic human resource management theory emphasizes that HR functions can create sustained competitive advantage by aligning people-related practices with organizational objectives, particularly in knowledge-intensive and technology-driven industries such as banking [10]. One of the most

prominent strategic roles of HR professionals in e-banking development is digital talent acquisition. As banking services increasingly rely on data analytics, cybersecurity, digital platforms, and customer-facing technologies, banks must attract employees with both technical expertise and service orientation. HR professionals are responsible for identifying evolving skill requirements, recruiting digitally competent personnel, and ensuring an appropriate balance between technical specialists and frontline employees capable of delivering high-quality digital services. Effective digital talent acquisition strengthens banks' internal capacity to operate complex e-banking systems and supports innovation in digital product development. In addition to recruitment, training and development represent a core HR function that directly influences e-banking success [11]. Continuous training initiatives enhance employees' digital literacy, system usage proficiency, and problem-solving abilities related to electronic service delivery. As digital banking technologies evolve rapidly, ongoing reskilling and upskilling are essential to prevent skill obsolescence and system underutilization. Prior studies suggest that employees who receive targeted digital training demonstrate higher confidence in using e-banking systems, provide more consistent service quality, and exhibit greater openness toward technological change. Performance management systems aligned with digital objectives further reinforce employee engagement with e-banking initiatives. HR professionals design appraisal and reward systems that encourage employees to adopt digital tools, improve service responsiveness, and contribute to innovation. When performance indicators explicitly include digital service quality, system reliability, and customer experience metrics,

employees are more likely to internalize e-banking goals and actively support digital transformation efforts. Conversely, misaligned performance systems may discourage employees from embracing digital platforms, even when technological infrastructure is available [12]. Another critical strategic role of HR professionals lies in change leadership and change management. E-banking initiatives often disrupt established routines, alter job roles, and require new ways of interacting with customers. These changes can generate resistance, uncertainty, and stress among employees if not managed effectively. HR professionals act as change leaders by facilitating transparent communication, providing change-related training, addressing employee concerns, and fostering collaboration between IT, operations, and frontline service units. Effective change leadership reduces resistance and enhances organizational readiness for digital banking transformation. Finally, HR professionals contribute to e-banking development through organizational culture building. A culture that promotes learning, innovation, adaptability, and customer orientation is essential for sustaining digital transformation [13]. HR-driven culture-building initiatives such as leadership development programs, knowledge-sharing practices, and innovation incentives create an environment in which employees feel empowered to experiment with digital solutions and continuously improve e-banking services. Such cultures support long-term digital capability development rather than short-term technology adoption. To synthesize these strategic roles, Table 3 summarizes key HR functions and their expected contributions to e-banking development as identified in prior literature.

Table 3: Strategic HR Roles and Their Contributions to E-Banking Development

Strategic HR Role	Description	Contribution to E-Banking Development
Digital talent acquisition	Recruitment of employees with digital and analytical skills	Strengthens internal capability to operate and innovate e-banking platforms
Training and development	Continuous reskilling and upskilling of employees	Enhances employee digital readiness and service quality

Performance management	Digital-aligned appraisal and reward systems	Encourages engagement, innovation, and digital service excellence
Change leadership	Managing resistance and facilitating digital transitions	Improves organizational change readiness
Culture building	Promoting learning, innovation, and adaptability	Sustains long-term digital transformation and innovation capability

The interrelationship between strategic HR roles and e-banking outcomes is conceptualized in Figure 2, which illustrates HR professionals as

central enablers linking human capital development to digital banking performance.



Figure 2: Strategic roles of HR professionals in enabling e-banking development.

The figure illustrates how HR-driven practices influence employee readiness and organizational change capability, leading to improved e-banking outcomes. Overall, prior studies consistently indicate that organizations with strategically aligned HR practices are more likely to achieve successful digital transformation outcomes. However, empirical research directly examining these HR roles within the specific context of e-banking remains limited, particularly in developing economies such as Pakistan. Most existing studies either focus on technological adoption or examine HR practices in isolation from digital banking outcomes [14]. This gap underscores the need to empirically investigate HR professionals as strategic enablers rather than administrative support functions in e-banking development initiatives. By explicitly linking

strategic HR roles to employee readiness and e-banking performance outcomes, the present study responds to this gap and advances a more integrated, human-centered understanding of digital banking transformation.

4 Methodology:

This section presents a detailed description of the methodological approach adopted to empirically investigate the strategic role of human resource (HR) professionals in advancing e-banking development within Pakistan’s banking sector. The methodology is carefully designed to ensure analytical rigor, methodological transparency, and consistency with the study’s theoretical foundations and research objectives. By adopting a structured and systematic research approach, the study seeks to generate reliable and valid empirical

evidence on the mechanisms through which HR-driven practices influence digital banking outcomes. A quantitative, explanatory research approach is employed to test the hypothesized relationships among strategic HR roles, employee digital readiness, organizational change readiness, and e-banking development outcomes. This approach is appropriate for examining complex causal relationships among latent constructs and for assessing both direct and indirect effects within a unified analytical framework. The explanatory orientation of the study enables a deeper understanding of how HR professionals function as strategic enablers of digital transformation rather than merely describing patterns of e-banking adoption [15]. The methodology section further elaborates on the key elements of the research process, including the overall research design, target population and sampling strategy, data collection procedures, and ethical considerations. It also explains the operationalization and measurement of the study constructs, followed by a description of the data analysis techniques employed to evaluate the proposed research model. Collectively, these methodological components provide a comprehensive and replicable account of how the empirical investigation is conducted, thereby strengthening the credibility and robustness of the study's findings.

4.1- Research Design:

This study adopts a quantitative, explanatory research design to empirically investigate the strategic role of human resource (HR) professionals in advancing e-banking development within Pakistan's banking sector. The explanatory design is appropriate because the primary objective of the study is to test theoretically derived relationships among multiple latent constructs and to explain the causal mechanisms through which strategic HR roles influence e-banking development outcomes. By employing a quantitative approach, the study enables systematic measurement, statistical testing, and generalization of findings across organizational contexts within the banking industry. A cross-sectional survey methodology is employed,

whereby data are collected from banking employees and managerial staff at a single point in time. This approach is widely used in organizational, HRM, and digital transformation research, particularly when examining perceptual constructs such as HR practices, employee readiness, and organizational capabilities [16]. The cross-sectional design is well suited for capturing respondents' assessments of current HR strategies and digital banking practices, which are central to understanding ongoing e-banking development initiatives in Pakistan's banks. The quantitative survey-based design also supports the application of multivariate data analysis techniques, allowing the study to simultaneously assess multiple relationships within a unified conceptual framework. Given the complexity of digital transformation processes and the interdependence of human, organizational, and technological factors, this design provides a robust foundation for testing mediation effects and examining both direct and indirect relationships among constructs. The proposed research framework conceptualizes strategic HR roles as the primary exogenous construct, reflecting HR professionals' involvement in digital talent acquisition, training and development, performance management, change leadership, and organizational culture building [17]. Employee digital readiness and organizational change readiness are positioned as mediating constructs, capturing the mechanisms through which HR strategies translate into improved digital banking performance. E-banking development outcomes, including service quality, system reliability, customer satisfaction, and innovation capability, are treated as the endogenous construct. This configuration is consistent with contemporary research in strategic human resource management, dynamic capabilities, and digital transformation literature. The overall research design aligns well with the predictive and theory-building orientation of the study. Rather than merely describing e-banking adoption patterns, the design seeks to explain how and why HR-driven organizational capabilities contribute to sustainable e-banking development [18]. This approach is particularly relevant in a developing

economy context, where internal organizational factors often determine the success of technology-driven initiatives. To further clarify the

methodological positioning of the study, Table 4 summarizes the key elements of the research design and their justification.

Table 4: Summary of Research Design Components

Design Element	Description	Justification
Research approach	Quantitative	Enables hypothesis testing and statistical generalization
Research purpose	Explanatory	Examines causal relationships among HR roles, readiness, and e-banking outcomes
Time horizon	Cross-sectional	Captures current perceptions of HR practices and digital banking initiatives
Unit of analysis	Individual employees and managers	Reflects perceptions of HR strategy and digital readiness
Analytical technique	PLS-SEM	Suitable for complex models with mediation and latent constructs

The logical structure of the research framework is visually represented in Figure 3, which illustrates the hypothesized relationships among strategic

HR roles, mediating readiness constructs, and e-banking development outcomes.

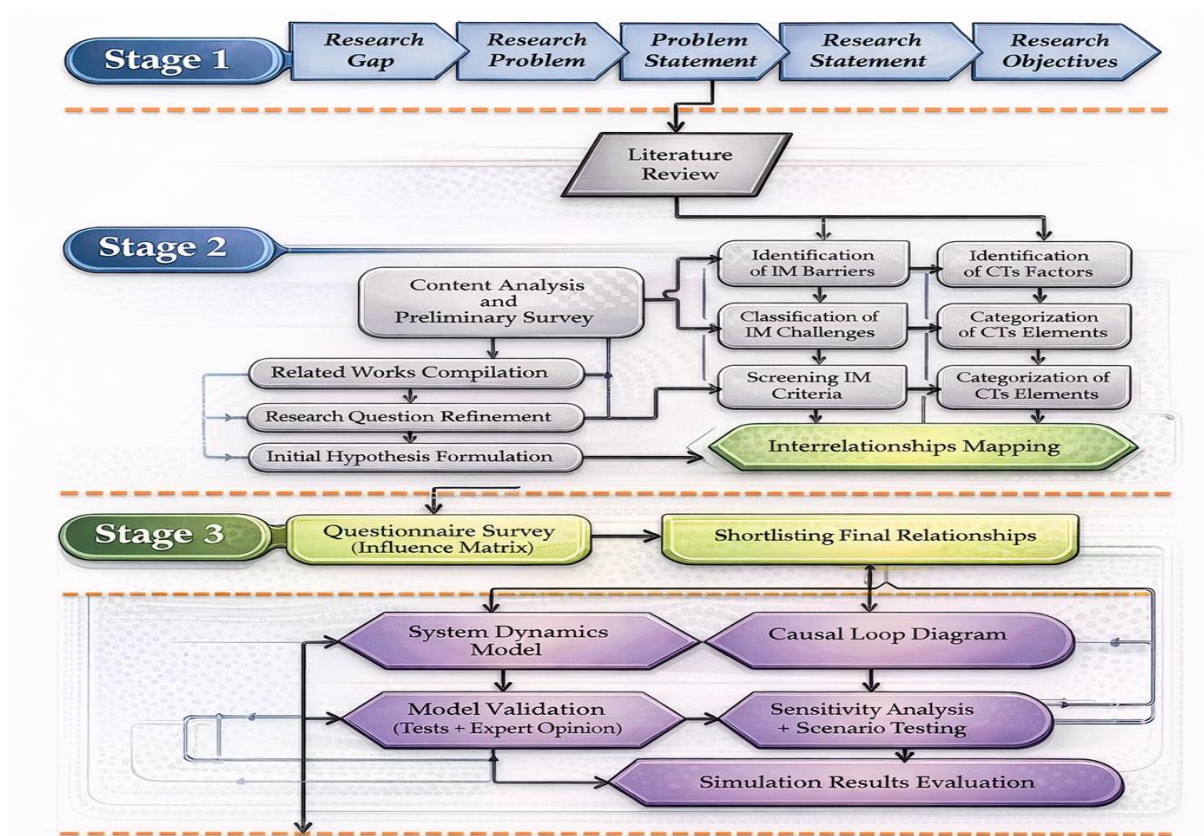


Figure 3: Conceptual research framework of the study.

The figure illustrates the explanatory research model, positioning strategic HR roles as antecedents of employee digital readiness and organizational change readiness, which in turn influence e-banking development outcomes. Overall, the selected research design provides a coherent and methodologically sound basis for examining the strategic contribution of HR professionals to e-banking development [19]. By integrating strategic HRM concepts with digital transformation outcomes through a quantitative explanatory framework, the study ensures analytical rigor, theoretical alignment, and empirical relevance. This design enables a comprehensive assessment of both the direct and indirect effects of HR strategy on digital banking performance, thereby supporting the study's overarching research objectives.

4.2- Population and Sampling Strategy:

The target population of this study comprises employees and managerial staff working in commercial banks operating in Pakistan. This population is considered appropriate because banking employees and managers are directly involved in, or significantly influenced by, human resource (HR) policies and the implementation, operation, and management of e-banking services. Their perceptions and experiences provide valuable insights into how HR-driven practices shape employee readiness, organizational change capability, and the effectiveness of digital banking initiatives. Pakistan's banking sector is characterized by a diverse range of commercial banks, including large domestic banks, private commercial banks, and banks with extensive digital and branchless banking operations [20]. Employees across these institutions interact with e-banking systems in different capacities ranging from frontline service delivery and operational support to system management and strategic planning. Consequently, capturing responses from multiple hierarchical levels and functional areas enhances the representativeness and

analytical depth of the study. To ensure that respondents possess adequate knowledge and exposure to digital banking practices, the study employs a non-probability purposive sampling technique. Purposive sampling is particularly appropriate for organizational and HRM research where the objective is to obtain data from information-rich respondents rather than achieve random population representation. This approach allows the researcher to intentionally select individuals who are actively engaged with e-banking systems or HR-related processes and can meaningfully evaluate the constructs under investigation [21]. Employees are selected from key functional areas that are closely linked to e-banking development, including operations, customer service, information technology support, digital banking units, and human resource departments. These functions play complementary roles in the delivery and management of e-banking services. Additionally, managerial staff are included to capture strategic-level perspectives on HR involvement, digital transformation initiatives, and organizational readiness for change. The inclusion of both employee-level and managerial respondents enables a more comprehensive understanding of how HR practices are perceived and enacted across organizational levels. The choice of purposive sampling is consistent with prior empirical studies in the fields of strategic HRM, digital transformation, and banking research, where access limitations, confidentiality concerns, and the specialized nature of respondents justify targeted selection [22]. Moreover, for PLS-SEM-based analysis, purposive sampling is widely accepted, particularly when the research emphasizes theory development, prediction, and explanation of complex relationships among latent constructs. The overall respondent selection process is conceptually illustrated in Figure 4, which depicts how the study population is filtered to obtain information-rich respondents relevant to the research objectives.

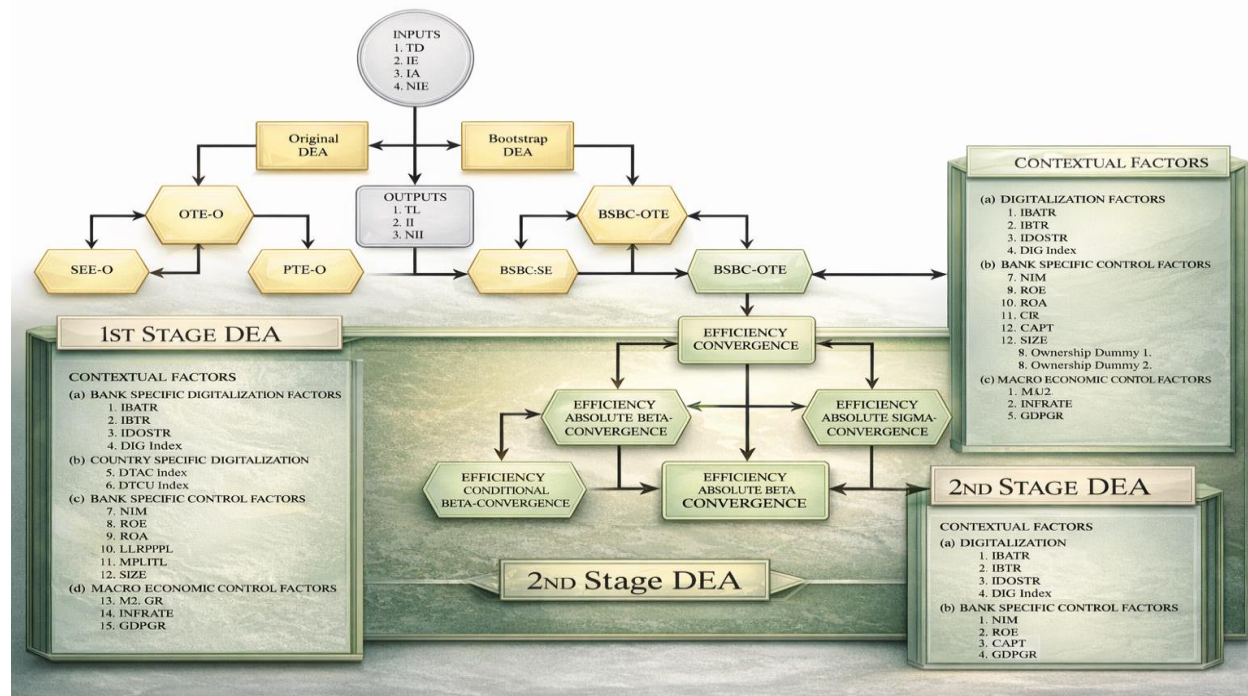


Figure 4: Sampling framework for selecting banking employees and managers.

The figure illustrates the progression from the overall banking workforce to purposively selected respondents with direct exposure to HR practices and e-banking operations. Overall, the adopted population and sampling strategy ensures that the data are collected from respondents who are well positioned to assess the strategic role of HR professionals in e-banking development. By focusing on employees and managers actively engaged in digital banking processes, the study enhances the relevance, validity, and explanatory power of its empirical findings while remaining consistent with established methodological practices in organizational and banking research.

4.3- Pilot Testing and Instrument Validation:

Prior to full-scale data collection, a pilot study is conducted to ensure the clarity, relevance, and reliability of the research instrument. Pilot testing is a critical methodological step in survey-based research, particularly when measuring latent constructs such as strategic HR roles, employee digital readiness, organizational change readiness, and e-banking development outcomes. The

primary objective of the pilot study is to identify potential issues related to item wording, ambiguity, response format, and contextual suitability within Pakistan’s banking environment. The pilot study involves a small group of banking professionals, including employees and junior managers from commercial banks who possess direct exposure to HR practices and e-banking operations [23]. These respondents are selected because they closely resemble the characteristics of the final study sample, thereby enhancing the external relevance of the pilot results. Participants are asked to review the questionnaire items and provide feedback on clarity, ease of understanding, length of the instrument, and perceived relevance to their organizational context. Based on this feedback, minor revisions are made to item phrasing, sequencing, and terminology to improve readability and reduce respondent fatigue [24]. In addition to qualitative feedback, preliminary quantitative analysis is conducted using the pilot data to assess initial reliability of the measurement scales. Internal consistency is evaluated using commonly accepted reliability indicators to ensure that items within each construct are consistently

measuring the same underlying concept. Items demonstrating weak performance or conceptual overlap are revised or removed prior to the final survey administration. Following pilot testing, instrument validation is conducted during full-scale data analysis using established PLS-SEM procedures. Measurement model evaluation focuses on assessing internal consistency reliability, convergent validity, and discriminant validity. Internal consistency reliability is examined to confirm that construct indicators exhibit adequate coherence. Convergent validity is assessed by evaluating the extent to which indicators of a construct share a high proportion of variance. Discriminant validity is examined to

ensure that each construct is empirically distinct from other constructs in the model. This multi-stage validation approach enhances the robustness and credibility of the measurement model and reduces the risk of measurement error influencing structural model results [25]. By combining qualitative feedback from pilot testing with rigorous statistical validation procedures, the study ensures that the research instrument is both contextually appropriate and psychometrically sound. The overall instrument development and validation process adopted in this study is illustrated in Figure 5, highlighting the sequential stages from questionnaire design to final measurement model validation.

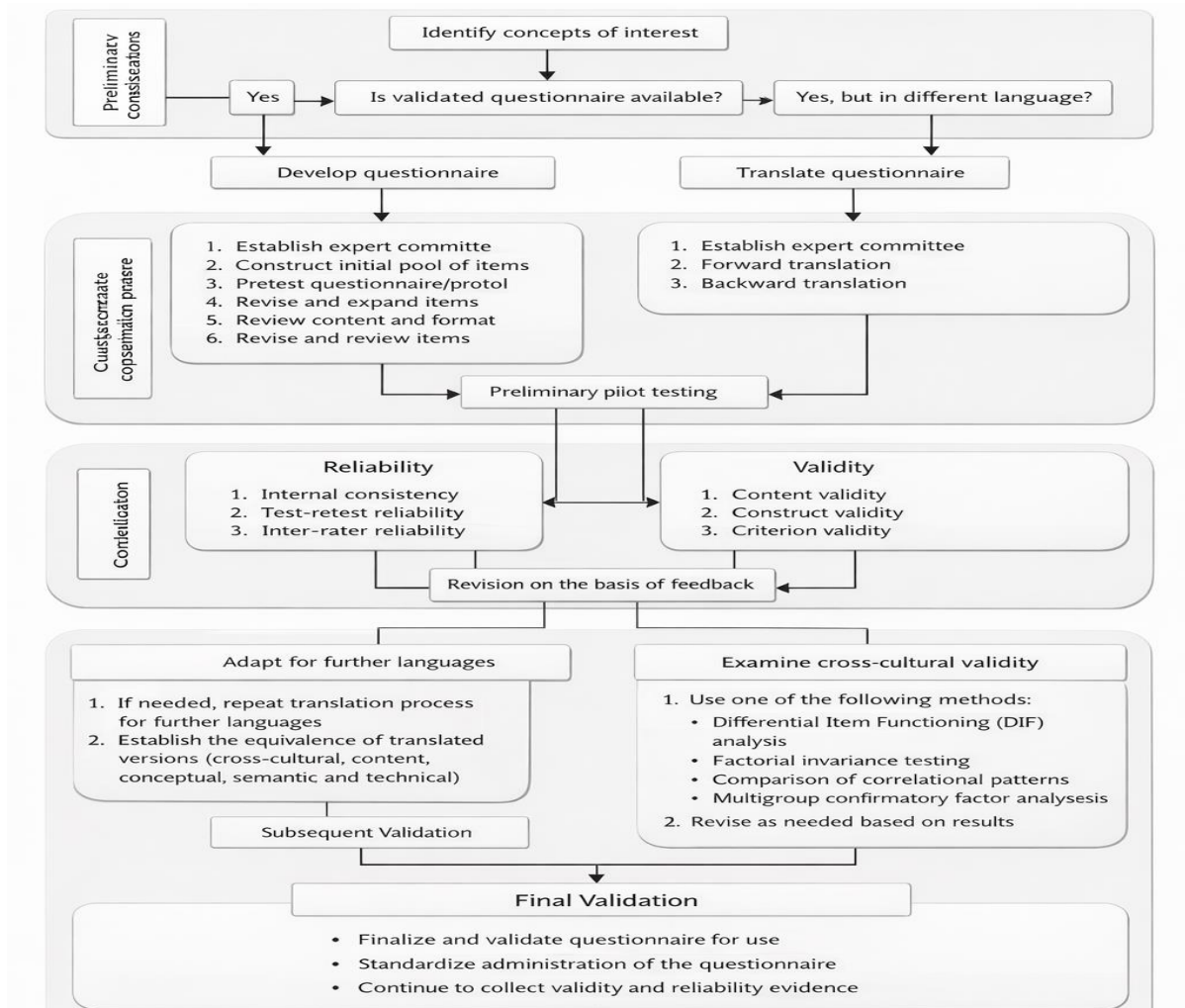


Figure 5: Instrument development, pilot testing, and validation process.

The figure illustrates the sequential steps involved in questionnaire design, pilot testing, refinement, and final measurement model validation. Overall, the pilot testing and instrument validation procedures strengthen the methodological rigor of the study by ensuring that the measurement instrument accurately captures the constructs of interest. This systematic approach enhances the reliability and validity of the empirical findings and provides a strong foundation for subsequent structural model analysis using PLS-SEM.

4.4 Data Analysis Technique:

To empirically examine the proposed research framework and analyze the complex relationships among strategic HR roles, employee digital readiness, organizational change readiness, and e-banking development outcomes, this study employs Partial Least Squares Structural Equation Modeling (PLS-SEM) using appropriate statistical software such as SmartPLS. PLS-SEM is particularly suitable for this study due to its ability to handle complex models involving multiple latent constructs and mediating relationships, as well as its strong predictive and explanatory orientation. Unlike covariance-based SEM, PLS-SEM places fewer restrictions on data normality and sample size, making it especially appropriate for survey-based organizational research conducted in developing economy contexts [26]. The selection of PLS-SEM is further justified by the study's emphasis on theory development and explanation rather than strict theory confirmation. The research seeks to explain how and through which mechanisms strategic HR roles contribute to e-banking development, rather than merely validating an established theory. Given the exploratory nature of linking HR strategy with digital banking outcomes in Pakistan's banking sector, PLS-SEM provides the methodological flexibility and robustness required to capture these relationships. Moreover, PLS-SEM is widely adopted in strategic HRM, information systems, and digital transformation studies, reinforcing its suitability for the present research. The data analysis process follows an established sequential logic in which the quality of the measurement

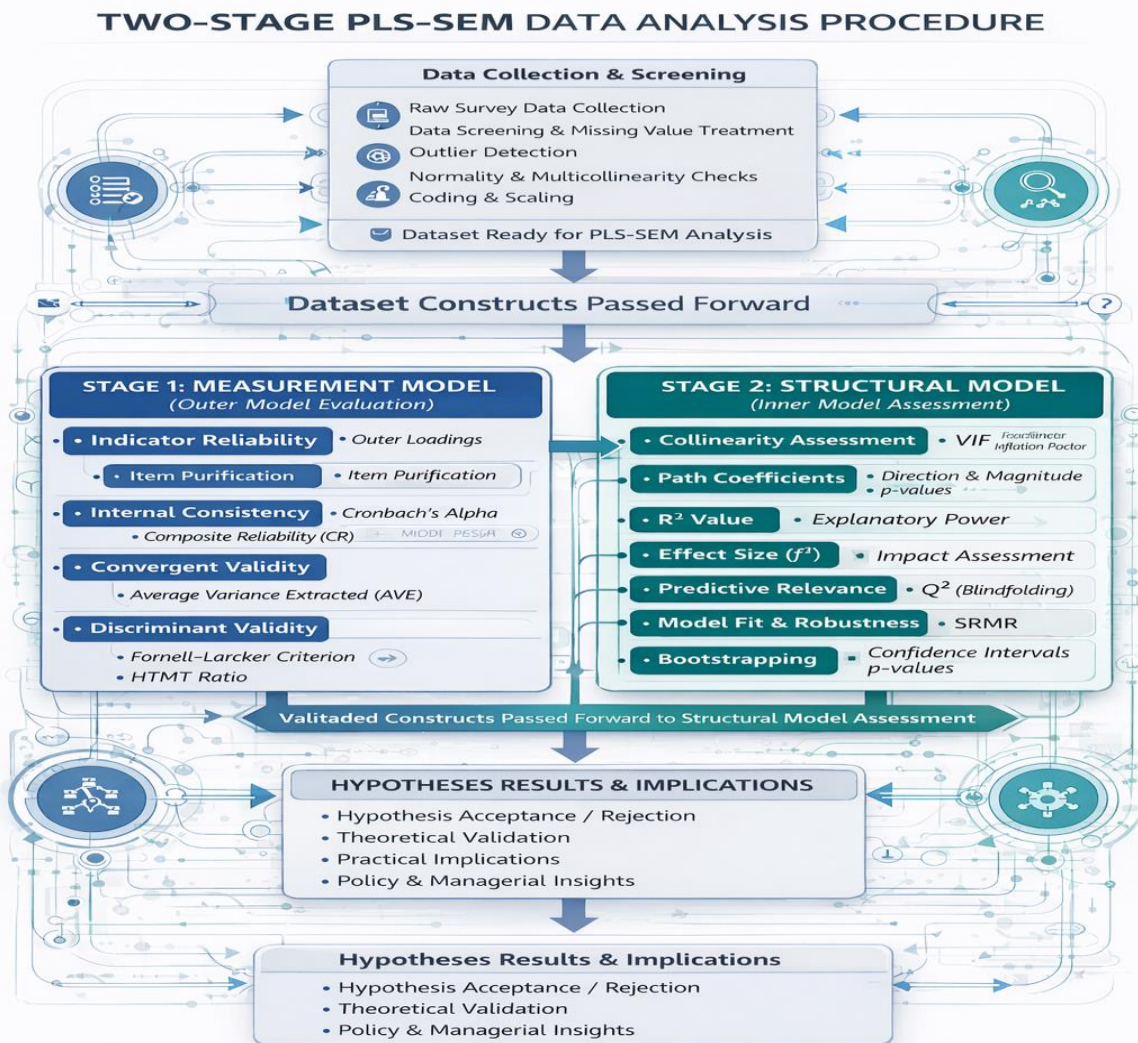
model is assessed prior to evaluating the structural relationships. This ensures that the constructs are measured reliably and validly before testing the hypothesized paths [27]. Measurement model evaluation focuses on assessing indicator reliability, internal consistency reliability, convergent validity, and discriminant validity to confirm that the observed variables accurately represent their respective latent constructs. Establishing satisfactory measurement properties is a critical prerequisite for meaningful interpretation of structural model results. Once the adequacy of the measurement model is confirmed, the analysis proceeds to the evaluation of the structural model. Structural model assessment examines the strength and direction of the hypothesized relationships through path coefficients, while the coefficient of determination (R^2) is used to assess the explanatory power of the model. Effect size measures (f^2) are examined to evaluate the relative contribution of exogenous constructs, and predictive relevance (Q^2) is assessed to determine the model's capability to predict endogenous constructs. Hypothesis testing is conducted using bootstrapping procedures, which generate robust estimates of standard errors, confidence intervals, and significance levels for the structural paths. In addition to direct relationships, the study places particular emphasis on understanding the underlying mechanisms through which strategic HR roles influence e-banking development [28]. To this end, mediation analysis is conducted to examine the indirect effects of HR roles on e-banking outcomes through employee digital readiness and organizational change readiness. The significance of these indirect effects is assessed within the PLS-SEM framework using bootstrapping, allowing the study to determine whether the influence of HR strategy on e-banking development is fully or partially mediated by these readiness constructs. This approach provides deeper explanatory insight into how HR professionals act as strategic enablers of digital banking transformation. For clarity and transparency, Table 5 summarizes the key analytical stages and evaluation criteria applied in the PLS-SEM analysis.

Table 5: Overview of PLS-SEM Data Analysis and Evaluation Criteria

Analytical Component	Evaluation Focus	Purpose
Measurement validation	Reliability and validity assessment	Ensure accurate measurement of latent constructs
Structural relationships	Path coefficients and R ² values	Examine strength and explanatory power of relationships
Effect size assessment	f ² statistics	Determine relative impact of predictors
Predictive assessment	Q ² values	Evaluate predictive relevance of the model
Mediation analysis	Indirect effects via readiness constructs	Explain underlying causal mechanisms

The overall analytical workflow adopted in this study is illustrated in Figure 6, which depicts the progression from data preparation and

measurement validation to hypothesis testing and mediation analysis within the PLS-SEM framework.



The figure illustrates the sequential evaluation of the measurement model, structural model, and mediation effects. Overall, the use of PLS-SEM provides a rigorous and flexible analytical framework for investigating the strategic role of HR professionals in e-banking development [29]. By integrating robust measurement validation with comprehensive structural and mediation analysis, the data analysis technique enhances the credibility, explanatory depth, and practical relevance of the study’s empirical findings.

4.5- Common Method Bias:

Given that the data for this study are collected using a single survey instrument and self-reported measures, the potential for common method bias (CMB) is carefully addressed. Common method bias may arise when measurement error is attributable to the data collection method rather than to the constructs being measured, potentially inflating or deflating observed relationships among variables. Recognizing this risk, the study adopts both procedural and statistical remedies to minimize the likelihood and impact of common method variance. At the procedural level, several design considerations are incorporated into the questionnaire development and data collection process. Respondents are assured of complete anonymity and confidentiality, which reduces evaluation apprehension and social desirability bias. This assurance encourages respondents to provide honest and unbiased responses regarding HR practices, employee readiness, and e-banking

development outcomes. In addition, the questionnaire employs clearly worded, concise, and unambiguous items to minimize respondent misunderstanding and reduce systematic response patterns [30]. Care is taken to ensure that items measuring different constructs are conceptually distinct, thereby limiting respondents’ tendency to infer relationships among variables while completing the survey. Furthermore, the measurement of constructs is psychologically separated within the questionnaire by varying item wording and contextual framing. This separation reduces the likelihood that respondents consciously link independent and dependent variables during response formation. Such procedural remedies are widely recommended in organizational and HRM research as effective means of mitigating common method bias at the design stage. In addition to procedural controls, statistical techniques are applied during data analysis to assess the presence of common method variance [31]. These diagnostic checks are conducted prior to interpreting the structural relationships to ensure that the results are not substantially influenced by method-related artifacts. The use of statistical assessments complements procedural remedies by providing empirical evidence regarding the extent to which common method bias may be present in the dataset. Table 6 summarizes the procedural and statistical approaches adopted in this study to address common method bias and their respective purposes.

Table 6: Procedural and Statistical Remedies for Common Method Bias

Approach	Description	Purpose
Anonymity assurance	Respondents’ identities are protected	Reduces social desirability and evaluation apprehension
Clear item wording	Simple and unambiguous questionnaire items	Minimizes respondent confusion and response patterns
Conceptual separation	Distinct framing of constructs within the survey	Reduces respondents’ ability to infer variable relationships
Statistical diagnostics	Post-data-collection bias assessment	Detects potential common method variance

The conceptual logic underlying the control of common method bias in this study is illustrated in

Figure 7, which depicts how procedural and statistical remedies jointly reduce the influence of

method-related variance on observed relationships.

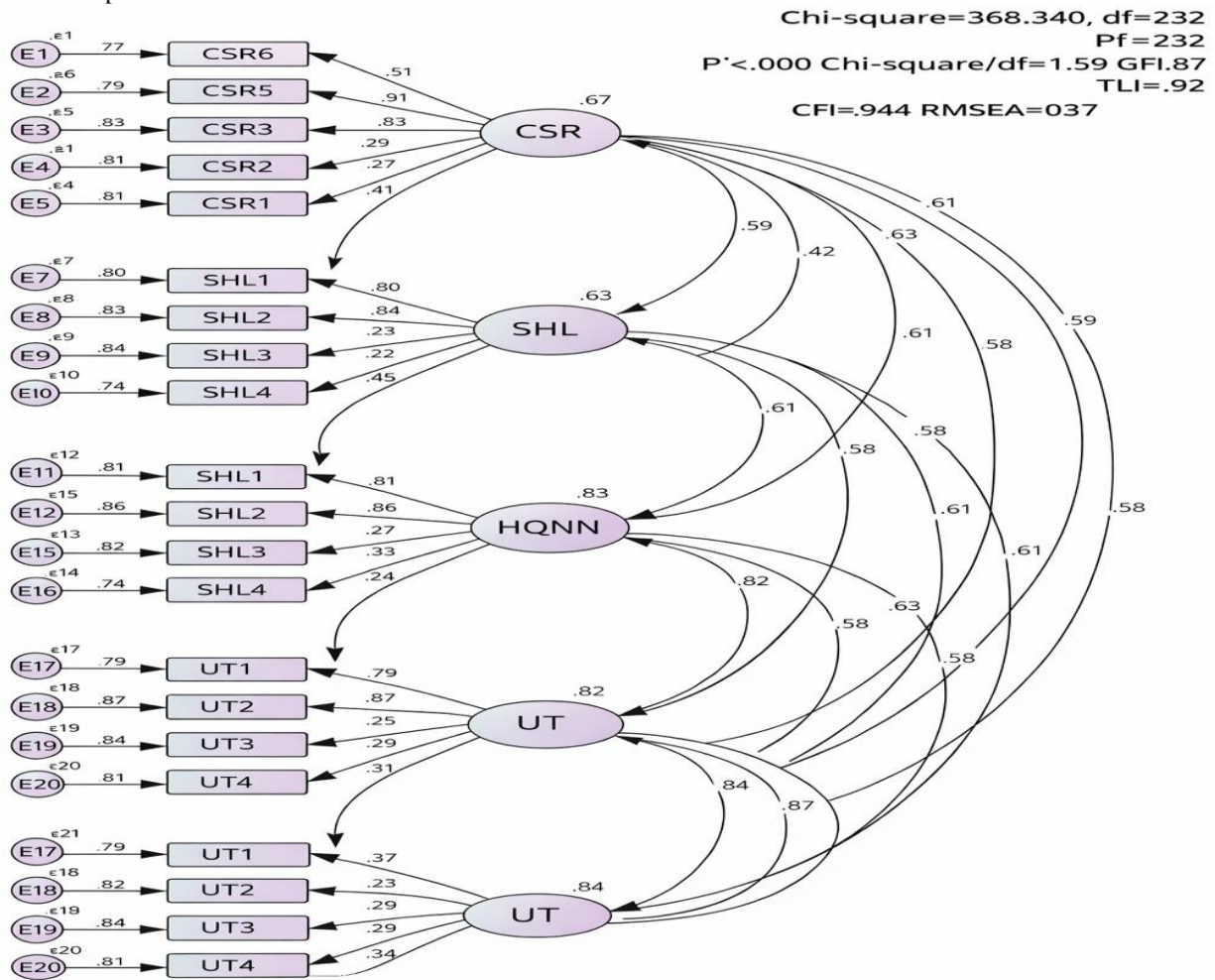


Figure 7: Framework for controlling common method bias in survey-based research

The figure illustrates how questionnaire design remedies and post-hoc statistical checks collectively mitigate the risk of common method variance. Overall, by integrating preventive design strategies with post-hoc statistical assessment, the study adopts a comprehensive and rigorous approach to managing common method bias. This dual strategy enhances the credibility and validity of the empirical findings and ensures that the observed relationships among strategic HR roles, employee readiness, and e-banking development outcomes reflect substantive effects rather than methodological artifacts. Such rigor is particularly

important in cross-sectional survey research and strengthens confidence in the study's conclusions.

5- Results and Discussion:

The empirical analysis of the proposed research framework is conducted using Partial Least Squares Structural Equation Modeling (PLS-SEM) to examine the relationships among strategic human resource roles, employee digital readiness, organizational change readiness, and e-banking development outcomes within Pakistan's banking sector. Prior to testing the hypothesized relationships, the adequacy of the measurement model is established to ensure that the constructs

are measured reliably and validly. The results indicate that indicator loadings, internal consistency measures, and construct validity statistics fall within acceptable thresholds, confirming that the measurement model is suitable for structural model evaluation. The structural model results demonstrate a statistically significant and positive relationship between strategic HR roles and e-banking development outcomes. This finding indicates that banks where HR professionals are strategically involved in digital talent acquisition, training and development, performance alignment, change leadership, and organizational culture building experience stronger digital banking performance [32]. Higher levels of service quality, system reliability, customer satisfaction, and innovation capability are observed in these institutions, suggesting that HR strategy directly contributes to the effectiveness of e-banking initiatives. The strength and significance of this relationship confirm that HR professionals function as strategic enablers of digital banking rather than merely administrative support units. In addition to the direct relationship, the results reveal that employee digital readiness plays a significant mediating role between strategic HR roles and e-banking development outcomes. HR-driven initiatives aimed at enhancing employees' digital skills, confidence, and familiarity with e-banking systems are found to substantially improve digital service delivery and innovation performance. As employees become more digitally prepared, they are better equipped to support customers, manage

system-related issues, and adapt to new digital processes. This mediation effect highlights that the influence of HR strategy on e-banking outcomes is largely transmitted through the enhancement of workforce digital capability. Organizational change readiness also emerges as a significant mediator in the relationship between strategic HR roles and e-banking development. The findings indicate that HR professionals' involvement in change communication, leadership support, and culture alignment strengthens employees' acceptance of digital transformation initiatives. Banks exhibiting higher levels of organizational readiness are more successful in managing resistance, embedding digital practices, and sustaining e-banking initiatives over time. The presence of both employee-level and organizational-level mediation effects underscores the multi-layered nature of HR's strategic contribution to digital banking development [33]. The explanatory power of the model is substantial, with meaningful coefficients of determination for the endogenous constructs, indicating that a significant proportion of variance in e-banking development outcomes is explained by strategic HR roles and readiness mechanisms. The model also demonstrates satisfactory predictive relevance, confirming its suitability for explaining digital banking performance in the Pakistani banking context. A summary of the key structural relationships and their empirical significance is presented in Table 7, which consolidates the direct effects observed in the structural model.

Table 7: Direct Structural Relationships and Empirical Outcomes

Structural Relationship	Path Direction	Statistical Significance	Interpretation
Strategic HR roles → E-banking development	Positive	Significant	Strategic HR involvement directly enhances digital banking outcomes
Strategic HR roles → Employee digital readiness	Positive	Significant	HR practices strengthen employee digital capability
Strategic HR roles → Organizational change readiness	Positive	Significant	HR leadership improves organizational preparedness for change
Employee digital readiness → E-banking development	Positive	Significant	Digitally ready employees improve service quality and innovation

Organizational change readiness → E-banking development	Positive	Significant	Change-ready organizations achieve stronger e-banking performance
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Beyond direct effects, the mediation analysis provides deeper insight into the mechanisms through which HR professionals influence e-banking development. The results indicate that both employee digital readiness and organizational change readiness significantly transmit the effects of strategic HR roles to e-banking outcomes. This suggests that HR practices enhance digital banking performance not only by directly influencing organizational systems but also by shaping

employee competencies and organizational attitudes toward change. The combined mediation effects confirm that HR professionals play a central integrative role in aligning human capital with digital transformation objectives. The relative contribution of the mediating constructs is summarized in Table 8, which presents the indirect effects and their implications for theory and practice.

Table 8: Mediation Effects of Employee Digital Readiness and Organizational Change Readiness

Mediating Construct	Nature of Mediation	Empirical Significance	Implication
Employee digital readiness	Partial mediation	Significant	HR strategy improves e-banking outcomes through enhanced workforce capability
Organizational change readiness	Partial mediation	Significant	HR-driven change leadership strengthens digital transformation effectiveness
Combined mediation	Complementary	Significant	Individual and organizational readiness jointly explain HR impact

The validated research framework derived from the empirical findings is visually illustrated in Figure 8, which depicts the significant direct and

indirect relationships among strategic HR roles, readiness constructs, and e-banking development outcomes.

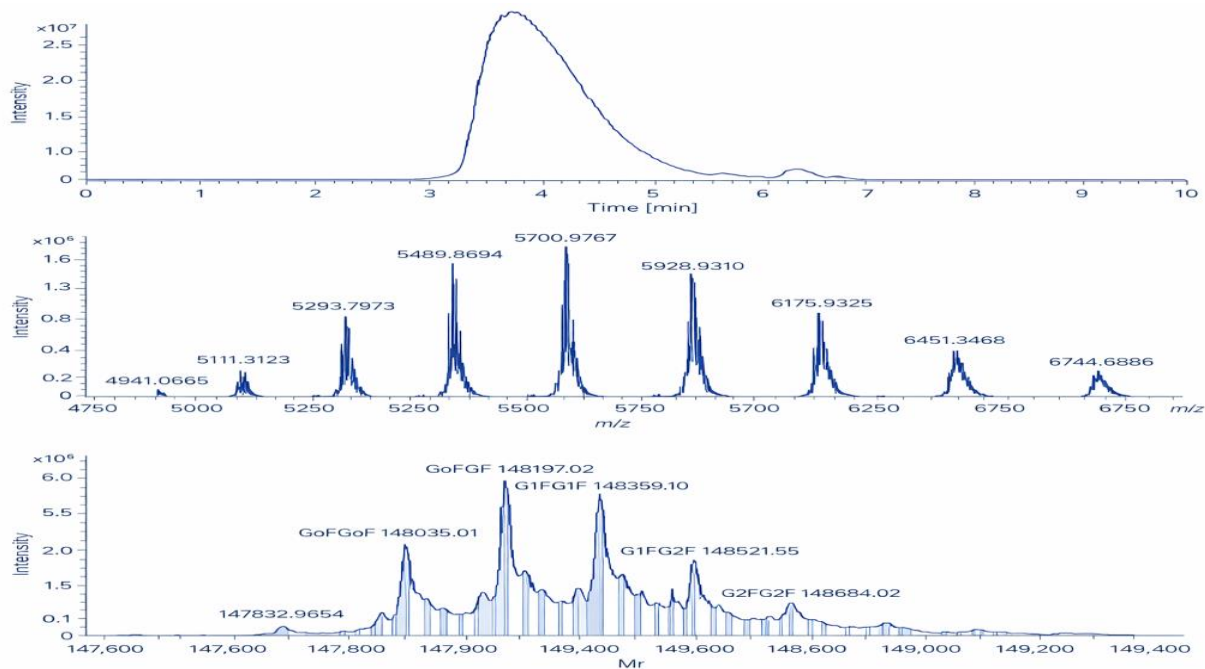


Figure 8: Empirically validated model results.

The figure illustrates the significant direct and mediated relationships confirmed by the PLS-SEM analysis. The findings provide strong theoretical support for viewing e-banking development as a human-centered digital transformation process. Consistent with strategic human resource management theory, the results demonstrate that aligning HR practices with digital strategy is essential for achieving sustainable performance outcomes. The significant direct and indirect effects observed in the model confirm that human capital capabilities and organizational readiness are critical mechanisms through which digital banking initiatives deliver value. In the context of Pakistan's banking sector, where digital maturity levels vary widely and skill gaps remain a challenge, these findings carry important implications. They suggest that investments in digital infrastructure must be accompanied by strategic HR interventions to fully realize the benefits of e-banking. By strengthening employee digital readiness and fostering organizational change readiness, banks can enhance service quality, reliability, customer satisfaction, and innovation capability. Overall, this study advances the literature by empirically validating a comprehensive, human-centered framework for e-

banking development and by demonstrating the strategic importance of HR professionals in shaping digital banking success.

6- Future Work:

While this study provides valuable empirical insights into the strategic role of human resource professionals in advancing e-banking development within Pakistan's banking sector, several avenues remain open for future research. First, the current research adopts a cross-sectional design, which captures perceptions at a single point in time [34]. Future studies could employ a longitudinal research design to examine how the role of HR professionals and employee readiness evolves over time as banks progress through different stages of digital transformation. Such an approach would enable researchers to assess causal dynamics more robustly and capture the long-term sustainability of HR-driven digital initiatives. Second, the present study focuses on employees and managerial staff within commercial banks operating in Pakistan. Future research could extend this framework to other segments of the financial sector, such as Islamic banks, microfinance institutions, or fintech organizations, to explore whether the strategic role

of HR professionals differs across institutional contexts. Comparative studies across countries or regions would also be valuable in identifying contextual factors such as regulatory environments, cultural norms, and digital maturity levels that influence the effectiveness of HR strategies in e-banking development [35]. Third, although this study examines employee digital readiness and organizational change readiness as key mediating mechanisms, future research could incorporate additional mediators or moderators to enrich the explanatory power of the model. Variables such as leadership style, organizational learning capability, technological turbulence, cybersecurity preparedness, or regulatory pressure may further clarify the conditions under which HR strategies exert stronger or weaker effects on e-banking outcomes. Exploring these factors could lead to a more nuanced understanding of digital banking transformation [36]. Fourth, future studies may benefit from integrating mixed-methods approaches by combining quantitative survey data with qualitative interviews or case studies. Qualitative insights from HR executives, digital transformation leaders, and frontline employees could provide deeper contextual understanding of how HR practices are designed, implemented, and perceived in practice. Such approaches would complement the statistical findings and offer richer explanations of organizational dynamics. Finally, future research could expand the outcome variables examined in this study by incorporating customer-side measures, such as customer trust, perceived security, and digital service loyalty, as well as objective performance indicators, including transaction volumes, cost efficiency, or system downtime metrics [37]. Linking HR-driven organizational capabilities to both internal and external performance indicators would further strengthen the strategic relevance of HRM in digital banking research. Overall, these directions offer promising opportunities to extend the human-centered perspective on e-banking development and to deepen understanding of how HR professionals can continue to shape the future of digital banking in emerging and developed economies alike.

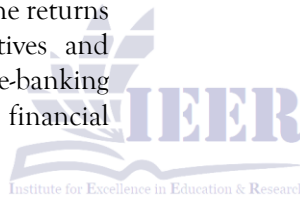
Conclusion:

This study set out to examine the strategic role of human resource professionals in advancing e-banking development within Pakistan's banking sector by adopting a human-centered perspective on digital transformation. Moving beyond the dominant technology-centric view in the e-banking literature, the research conceptualized HR professionals as strategic enablers who align human capital capabilities with digital banking objectives. By integrating strategic HR roles, employee digital readiness, organizational change readiness, and e-banking development outcomes within a unified empirical framework, the study provides a comprehensive understanding of how internal organizational factors shape digital banking success. The empirical findings demonstrate that strategic HR involvement has a significant and positive influence on e-banking development outcomes, including service quality, system reliability, customer satisfaction, and innovation capability. Banks in which HR professionals actively engage in digital talent acquisition, training and development, performance management, change leadership, and culture building are better positioned to translate technological investments into effective and sustainable digital banking performance. These findings underscore that e-banking development is not merely a function of technological infrastructure but is deeply rooted in the strategic management of human resources. The study further reveals that employee digital readiness and organizational change readiness play crucial mediating roles in the relationship between strategic HR roles and e-banking development. HR-driven practices enhance employees' digital skills, confidence, and willingness to engage with e-banking systems, while simultaneously fostering an organizational environment that supports change and innovation. These mediating mechanisms highlight how HR professionals influence digital banking outcomes both at the individual and organizational levels, reinforcing the importance of readiness and adaptability in digital transformation initiatives. From a theoretical perspective, this research contributes to the e-banking and strategic human resource

management literature by empirically validating a human-centered framework for digital banking development. It extends existing knowledge by demonstrating that HR professionals are not peripheral actors in digital transformation but central contributors to value creation in technology-intensive service industries. By focusing on Pakistan as a developing economy context, the study also enriches the literature with context-specific insights where institutional constraints, skill gaps, and varying levels of digital maturity present unique challenges to e-banking adoption. From a practical standpoint, the findings offer important implications for banking executives and policymakers. The results suggest that investments in digital banking infrastructure should be accompanied by deliberate HR strategies aimed at building digital skills, managing organizational change, and fostering a culture of continuous learning and innovation. Strengthening the strategic role of HR professionals can help banks maximize the returns on their digital transformation initiatives and ensure the long-term sustainability of e-banking services in an increasingly competitive financial landscape.

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