



A Research Proposal of

**The Role of Strategic Workforce Planning in Reducing Skill Gaps in AI
Adoption: Evidence from Bangladeshi Banks**

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The Role of Strategic Workforce Planning in Reducing Skill Gaps in AI Adoption: Evidence from Bangladeshi Banks

Abstract

Purpose:

The rapid adoption of Artificial Intelligence (AI) in the banking sector is transforming organizational processes and workforce requirements, creating significant challenges related to skill gaps. This study aims to examine the role of Strategic Workforce Planning (SWP) in reducing skill gaps associated with AI adoption in the banking sector of Bangladesh. Specifically, it investigates how SWP influences workforce capability development and enhances organizational readiness for AI-driven transformation.

Design/Methodology/Approach:

The study adopts a pragmatic research philosophy and a mixed-methods approach to provide both depth and generalizability. The qualitative phase involves 10-15 semi-structured interviews with HR managers, bank executives, and digital transformation professionals to explore AI adoption practices and workforce challenges. The quantitative phase employs a structured survey of bank employees ($n \approx 200-300$), analyzed using Structural Equation Modeling (SEM) to test the relationships between Strategic Workforce Planning, workforce capability development, and perceived skill gaps. The study is theoretically grounded in the Resource-Based View (RBV), Dynamic Capability Theory, and Socio-Technical Systems (STS) Theory.

Expected Findings

The study is expected to demonstrate that Strategic Workforce Planning has a significant negative effect on skill gaps in AI adoption and a positive effect on workforce capability development. Furthermore, workforce capability is anticipated to mediate the relationship between SWP and skill gaps, highlighting the importance of capability development as a mechanism through which workforce planning enhances organizational readiness for AI.

Originality/Value

This research contributes to the literature by linking Strategic Workforce Planning with AI-driven workforce transformation in an emerging economy context. It provides a multi-theoretical perspective on how organizations can align human capital with technological change. Practically, the study offers evidence-based recommendations for banks to improve workforce readiness, reduce skill gaps, and enhance the effectiveness of AI adoption strategies.

Keywords: Strategic Workforce Planning, Artificial Intelligence, Skill Gaps, Workforce Capability, Banking Sector, Bangladesh, Digital Transformation

1.1 Background of the Study

The banking sector globally is undergoing a significant transformation driven by the integration of Artificial Intelligence (AI) into operational and strategic functions. Technologies such as machine learning, predictive analytics, robotic process automation (RPA), AI-based credit scoring, and fraud detection systems are increasingly being adopted to improve efficiency, reduce operational costs, and enhance customer experience. However, while AI adoption creates opportunities for improved performance, it simultaneously reshapes workforce requirements by increasing the demand for digital, analytical, and cognitive skills.

This transformation is particularly evident in the Bangladeshi banking sector, which is currently in a transitional phase of AI adoption. Recent evidence suggests that approximately 65% of banks in Bangladesh have implemented AI technologies, although their use remains largely limited to routine and high-volume tasks such as robotic process automation (RPA), which is adopted by nearly 49% of banks. Despite this progress, the depth and sophistication of AI integration remain relatively low, as only about 6% of banks are considered fully prepared for advanced AI adoption, while the majority (43%) report only moderate readiness.

This disparity highlights a critical structural issue: while technological adoption is progressing, organizational preparedness—particularly in terms of workforce capability—is lagging behind. Existing literature supports this observation. For instance, Halder et al. (2025) argue that AI-driven transformation creates dynamic and evolving skill demands that organizations struggle to anticipate effectively. Similarly, Upadhyay and Sharma (2025) emphasize that AI-enabled workforce systems require predictive capability mapping and continuous skill development to align employees with emerging technological roles.

In Bangladesh, this challenge is further intensified by workforce-related constraints. A significant proportion of banks report a shortage of skilled personnel—ranging between 56.3% and 79%—capable of managing AI and machine learning systems. This indicates that the primary barrier to effective AI adoption is not technological availability but human capital limitations.

Moreover, workforce readiness is also influenced by employee perceptions and attitudes toward AI. Evidence shows that approximately 80% of bank employees fear AI-driven job displacement, particularly in clerical and routine roles. This fear can create resistance to technological change and hinder effective implementation. At the same time, there is a strong recognition of the need for workforce development, with 73.3% of banking professionals identifying training and reskilling as essential for improving AI-related efficiency and security.

These findings suggest that AI adoption in the Bangladeshi banking sector is characterized by a “capability paradox”: while organizations are investing in advanced technologies, they lack the workforce readiness required to fully utilize them. As Yanamala (2024) argues, traditional workforce planning approaches are often reactive and based on historical data, making them inadequate for addressing rapidly evolving skill requirements in dynamic environments.

In this context, Strategic Workforce Planning (SWP) emerges as a critical mechanism for bridging the gap between technological adoption and workforce capability. SWP enables organizations to

forecast future skill requirements, identify capability gaps, and implement targeted training and development strategies. As Parasa (2023) highlights, AI-driven workforce planning enhances organizational decision-making by integrating predictive analytics into talent management processes, allowing firms to proactively address skill shortages.

Therefore, within the Bangladeshi banking sector, the effective implementation of Strategic Workforce Planning is essential to ensure that workforce capabilities evolve in line with AI-driven transformation, thereby enabling organizations to fully realize the benefits of technological innovation.

1.2 Problem Statement

Despite the increasing adoption of Artificial Intelligence (AI) technologies in the banking sector, a significant mismatch exists between the skills required to operate these systems and the existing capabilities of employees. This mismatch represents a critical barrier to the effective utilization of AI, limiting organizational performance and reducing the potential benefits of digital transformation.

In the context of Bangladesh, this problem is particularly severe due to the uneven development of technological infrastructure and workforce capabilities. Although approximately 65% of banks have adopted AI tools, their application is largely confined to basic functions such as robotic process automation, indicating limited integration into core strategic operations. Furthermore, only 6% of banks are considered fully prepared for advanced AI adoption, reflecting a substantial gap between technological ambition and organizational readiness.

According to Khan et al (2025) a key factor contributing to this gap is the shortage of skilled personnel, reported by between 56.3% and 79% of banks, which highlights the lack of expertise required to manage AI systems effectively. This shortage is compounded by insufficient workforce development initiatives, as traditional training approaches often fail to address emerging skill requirements.

Additionally, employee perceptions further exacerbate the problem. The finding that approximately 80% of bank employees fear AI-driven job displacement suggests a high level of uncertainty and resistance within the workforce. Such concerns can reduce employee engagement with AI systems and hinder the adoption of new technologies. At the same time, the recognition by 73.3% of banking professionals that training is essential indicates a clear demand for structured workforce development strategies (Khan et al., 2025).

Existing literature suggests that these challenges are rooted in the limitations of traditional workforce planning approaches. Halder et al. (2025) argue that organizations struggle to predict future skill requirements due to the dynamic nature of technological change. Similarly, Yanamala (2024) highlights that reactive, data-limited workforce planning systems are inadequate for managing AI-driven transformation. As a result, organizations fail to align workforce capabilities with evolving job demands, leading to persistent skill gaps.

Furthermore, the problem is intensified by the lack of clearly defined AI-integrated roles within organizations. Without a clear understanding of future job requirements, training programs may be misaligned with actual needs, resulting in ineffective skill development. This reflects a broader issue of strategic misalignment between human resource management and digital transformation initiatives.

Therefore, the central problem addressed in this study is the lack of effective alignment between workforce capabilities and AI-driven job requirements, combined with the limited use of Strategic Workforce Planning as a proactive tool to address this issue. This problem is particularly critical in the Bangladeshi banking sector, where the gap between technological adoption and workforce readiness threatens the sustainability and effectiveness of AI-driven transformation.

1.3 Research Gap

Despite the growing body of literature on Artificial Intelligence (AI) adoption and workforce transformation, several critical gaps remain, particularly in relation to the strategic management of workforce capabilities in emerging economies such as Bangladesh.

First, existing research is predominantly concentrated in developed economies, resulting in a lack of empirical evidence from developing countries where institutional structures, technological readiness, and workforce capabilities differ significantly. In contexts such as Bangladesh, where digital transformation is uneven and workforce development systems are still evolving, the dynamics of AI adoption present unique challenges that are not adequately captured in current literature.

Second, although prior studies have examined workforce planning and skill development, these areas are often treated as separate domains. There is limited research that explicitly links Strategic Workforce Planning (SWP) with AI-driven skill gaps within a unified and integrated framework. As a result, the literature lacks a comprehensive understanding of how workforce planning can systematically address the capability mismatches created by AI adoption.

Third, much of the existing research focuses on training and reskilling as primary solutions to skill gaps but overlooks a deeper structural issue: the lack of clear role definitions and capability alignment in AI-driven environments. Without a clear understanding of how job roles are evolving, organizations may invest in training programs that fail to address actual skill requirements, thereby perpetuating the mismatch between workforce capabilities and job demands.

Fourth, another significant limitation in the literature is its strong output-oriented focus. Many studies analyse the impact of AI on organizational performance, efficiency, and productivity, emphasizing what AI can achieve. However, they largely overlook the strategic processes required to enable these outcomes, particularly in terms of workforce planning. In other words, while existing research explains *“what AI does for organizations,”* it pays limited attention to *“how organizations prepare their workforce to realize these benefits.”* This creates a critical gap, as the success of AI adoption depends not only on technological investment but also on strategic workforce processes such as succession planning, workforce demand forecasting, and capability alignment.

Fifth, there is a lack of sector-specific research, particularly in the banking sector within emerging economies. This is notable because banking is one of the industries most significantly impacted by AI transformation due to its reliance on both advanced technological systems and human decision-making. However, limited studies examine how banks strategically manage workforce challenges arising from AI adoption.

Sixth, from a methodological perspective, very few studies adopt a mixed-methods approach that integrates both managerial and employee perspectives. This limits the ability to capture the complex, multi-level, and socially constructed nature of AI-driven workforce challenges, where organizational strategies and employee experiences interact dynamically.

Finally, there is insufficient attention to the mechanisms and contextual factors through which workforce planning influences skill gaps. In particular, the mediating role of workforce capability development and the moderating role of technological turbulence remain underexplored, despite their importance in dynamic digital environments.

Taken together, these gaps highlight the need for a comprehensive study that moves beyond isolated analyses of AI outcomes or training interventions and instead examines Strategic Workforce Planning as a central mechanism for aligning workforce capabilities with AI-driven transformation. Accordingly, this study addresses these gaps by developing an integrated framework that examines how SWP reduces AI-driven skill gaps through workforce capability development within the context of the Bangladeshi banking sector.

1.4 Significance of the Study (The “So What”)

The significance of this study lies in addressing a critical and timely issue at the intersection of technological transformation and workforce readiness, which has direct implications for organizational performance, sustainability, and long-term competitiveness.

From a practical perspective, failure to address skill mismatches can prevent organizations from realizing the full benefits of AI adoption. Even when advanced technologies are implemented, a lack of workforce capability can lead to underutilization, inefficiencies, and increased operational risk. By focusing on Strategic Workforce Planning, this study provides a structured and proactive approach for aligning workforce capabilities with technological change, enabling organizations to maximize the value of their AI investments.

Furthermore, the study addresses key workforce-related challenges, including employee anxiety, job displacement fears, and talent shortages, which are increasingly evident in AI-driven environments. By examining the role of workforce capability development, the study offers insights into how organizations can reduce resistance to change, enhance employee adaptability, and build a more resilient workforce.

From a strategic perspective, the study emphasizes that AI adoption should not be viewed solely as a technological upgrade but as a comprehensive organizational transformation process. It

highlights the importance of integrating workforce planning with digital strategy, ensuring alignment between human capabilities and technological systems.

From a theoretical perspective, the study contributes to the literature by integrating the Resource-Based View (RBV), Dynamic Capability Theory, and Socio-Technical Systems (STS) Theory to explain how organizations can effectively manage AI-driven transformation. By doing so, it advances understanding of workforce planning as a dynamic and strategic capability rather than a purely administrative function.

From a methodological perspective, the use of a mixed-methods approach enables the study to capture both organizational strategies and employee experiences, providing a more holistic understanding of the problem.

Finally, by focusing on the Bangladeshi banking sector, the study provides context-specific insights that are currently lacking in the literature. These insights are valuable not only for academic research but also for policymakers and industry practitioners seeking to enhance workforce readiness in emerging digital economies.

Overall, this study is important because it moves beyond merely identifying the problem of AI-driven skill mismatch and provides a theoretical and practical pathway for solving it through Strategic Workforce Planning, thereby contributing to both knowledge and practice.

1.4 Research Aim

The aim of this study is to examine the role of Strategic Workforce Planning in reducing skill gaps associated with AI adoption in the banking sector of Bangladesh.

1.5 Research Objectives

1. To analyze the extent of AI adoption in Bangladeshi banks
2. To identify skill gaps associated with AI adoption in the banking sector
3. To examine the role of Strategic Workforce Planning in addressing these skill gaps
4. To evaluate the impact of workforce capability development on reducing skill gaps
5. To provide recommendations for improving workforce readiness in AI-driven environments

1.6 Research Questions

1. How is AI adoption transforming workforce skill requirements in Bangladeshi banks?
2. What types of skill gaps exist in the context of AI adoption?
3. How does Strategic Workforce Planning influence workforce capability development?

4. To what extent does SWP reduce skill gaps in AI-driven banking environments?
5. What challenges do banks face in implementing effective workforce planning strategies?

1.7 Hypotheses Development

H1: Strategic Workforce Planning has a significant negative effect on skill gaps in AI adoption.

H2: Strategic Workforce Planning positively influences workforce capability development.

H3: Workforce capability development has a significant negative effect on skill gaps.

H4: Workforce capability development mediates the relationship between SWP and skill gaps.

H5: Technological turbulence moderates the relationship between Strategic Workforce Planning and skill gaps in AI adoption.

1.8 Research Philosophy

This study adopts a pragmatic research philosophy, which emphasizes the use of the most appropriate methods to address complex real-world problems rather than adhering to a single philosophical tradition. Pragmatism is particularly suitable for this research because the issue of AI-driven skill mismatch in the banking sector involves both objective and subjective dimensions. On the one hand, workforce capability, skill gaps, and Strategic Workforce Planning (SWP) practices can be measured quantitatively. On the other hand, employee perceptions, role uncertainty, and experiences of AI transformation are socially constructed and require qualitative interpretation. As Saunders et al. (2019) argue, pragmatism allows researchers to combine multiple methods to gain a more comprehensive understanding of complex organizational phenomena.

From an ontological perspective, this study adopts a pluralistic stance, recognizing that reality is not singular but multiple and socially constructed. In the context of AI-driven workforce transformation, different stakeholders perceive and experience change differently. Managers may interpret AI as a source of efficiency and competitive advantage, while employees may experience it as a source of pressure and job insecurity, and HR professionals may view it as a shift toward new competency requirements. This indicates that AI-driven skill mismatches are not purely objective phenomena but are shaped by organizational roles, experiences, and contexts. Such a perspective aligns with the view that organizational realities are constructed through social interaction rather than existing independently of human interpretation (Bryman, 2016).

Epistemologically, the study adopts a pragmatic approach to knowledge generation, which integrates both positivist and interpretivist elements. Quantitative methods are used to measure relationships between Strategic Workforce Planning, workforce capability development, and skill gaps, while qualitative methods provide deeper insights into how these relationships are perceived and experienced within organizations. According to Creswell and Plano Clark (2018), mixed-

methods research is particularly effective in addressing complex research problems because it combines the strengths of both quantitative and qualitative approaches.

The adoption of pragmatism is further justified by the practical orientation of this study. The research does not aim solely to explain the phenomenon of skill mismatch but also to provide actionable solutions for organizations. By examining how Strategic Workforce Planning can reduce skill gaps in AI-driven environments, the study seeks to generate knowledge that is both theoretically meaningful and practically relevant. Therefore, pragmatism provides a flexible and robust philosophical foundation for achieving the research objectives.

1.9 Kuhn's Paradigm Shift and Critical Perspective

The theoretical foundation of this study can be further understood through the lens of Kuhn's (1962) paradigm theory, which explains how systems evolve through periods of stability, crisis, and transformation. Kuhn (1962) argues that scientific and organizational progress does not occur gradually but through disruptive shifts from one dominant paradigm to another when existing frameworks can no longer explain emerging challenges.

In the context of this research, the traditional banking system represents an existing paradigm, characterized by manual processes, routine clerical roles, and relatively stable skill requirements. Within this paradigm, workforce planning was largely reactive, relying on historical data and incremental adjustments. However, the introduction of Artificial Intelligence has disrupted this stability by fundamentally changing how work is performed and what skills are required.

This disruption creates a paradigm crisis, where existing workforce capabilities no longer align with technological demands. The emergence of AI-driven systems such as automated credit scoring, fraud detection, and chatbots has led to increasing skill mismatches, role ambiguity, and workforce uncertainty. As Kuhn (1962) suggests, such crises occur when the dominant paradigm fails to address new realities, prompting the need for transformation.

This crisis leads to a paradigm shift, in which organizations transition from traditional workforce models to AI-driven, digitally enabled systems. In this new paradigm, employees are required to possess advanced digital, analytical, and adaptive skills, and workforce planning must evolve from a reactive process to a strategic and predictive function. Within this transformation, Strategic Workforce Planning acts as a bridging mechanism, enabling organizations to align workforce capabilities with technological change and successfully transition between paradigms.

However, while Kuhn's paradigm theory provides a useful framework for understanding transformation, it has been subject to significant criticism. One major limitation is that Kuhn conceptualizes paradigm shifts as relatively linear and uniform, implying that organizations move collectively from one paradigm to another. In reality, organizational transformation—particularly in the context of AI—is far more complex and uneven. As highlighted in contemporary organizational research, multiple paradigms can coexist within the same organization, with different stakeholders adopting different perspectives on technological change (Bryman, 2016).

In the context of this study, managers may embrace AI as a tool for efficiency, while employees may resist it due to fear of job displacement, and HR professionals may struggle to define new roles and competencies. This indicates that the transition between paradigms is not uniform but fragmented and socially constructed. Therefore, relying solely on Kuhn's framework may oversimplify the complexity of AI-driven workforce transformation.

Furthermore, Kuhn's model does not adequately account for the role of agency and strategic intervention in managing change. In organizational settings, transformation is not an automatic process but requires deliberate actions, such as workforce planning, training, and capability development. This is where Strategic Workforce Planning becomes critical, as it provides a structured mechanism for managing the transition between paradigms rather than passively responding to change.

Therefore, while Kuhn's paradigm theory offers valuable insights into the disruptive nature of AI-driven transformation, this study adopts a more contextual and dynamic interpretation, recognizing that multiple realities coexist and that transformation requires active organizational intervention. This perspective aligns with the pragmatic research philosophy adopted in this study, which emphasizes flexibility, complexity, and practical problem-solving.

2. Literature review

2.1 Hypothesis Development

This section develops the theoretical and empirical foundation of the study by critically examining the relationships between Strategic Workforce Planning (SWP), workforce capability development, and skill gaps in AI adoption. The discussion is grounded in the Resource-Based View (RBV), Dynamic Capability Theory, and Socio-Technical Systems (STS) Theory, ensuring both theoretical rigor and practical relevance in explaining how organizations align human capital with rapid technological transformation.

From an RBV perspective, human capital is considered a strategic resource that enables firms to achieve sustained competitive advantage when effectively developed and deployed (Barney, 1991). However, the introduction of Artificial Intelligence (AI) in the banking sector has significantly altered skill requirements, creating a mismatch between existing employee competencies and emerging technological demands (Brynjolfsson & McAfee, 2017; Autor, 2015). Dynamic Capability Theory further suggests that organizations must continuously adapt, integrate, and reconfigure their internal capabilities to respond to such environmental changes (Teece, Pisano, & Shuen, 1997; Teece, 2018). In this context, SWP plays a critical role in anticipating future skill needs and aligning workforce strategies accordingly (Wright & McMahan, 2011).

Complementing this, STS Theory emphasizes the joint optimization of technological systems and human capabilities, highlighting that successful AI adoption depends not only on technological investment but also on workforce readiness and adaptability (Trist & Bamforth, 1951; Pasmore, 1988). Empirical studies further indicate that organizations often face a "skills mismatch" during

digital transformation due to inadequate workforce planning and insufficient capability development (Bughin et al., 2018; World Economic Forum, 2023).

Building on these theoretical foundations, the central argument of this study is that Strategic Workforce Planning reduces AI-driven skill gaps both directly and indirectly by enhancing workforce capability development. Specifically, SWP enables organizations to forecast future roles, identify capability gaps, and implement targeted reskilling and upskilling initiatives, thereby strengthening employees' ability to work effectively with AI technologies (Boudreau & Ramstad, 2005; Cappelli, 2008). As a result, workforce capability development acts as a key mechanism through which SWP mitigates skill mismatches, particularly within the rapidly transforming banking sector.

2.2 Strategic Workforce Planning and Skill Gaps

Strategic Workforce Planning (SWP) is increasingly recognized as a proactive and data-driven process that enables organizations to anticipate future workforce requirements and align human capital with evolving business needs. This alignment becomes particularly critical in the context of Artificial Intelligence (AI) adoption, where rapid technological transformation continuously reshapes job roles and skill requirements, often creating mismatches between existing employee capabilities and emerging organizational demands. As a result, organizations are no longer able to rely on reactive workforce management approaches but must instead adopt forward-looking strategies that anticipate and address these changes.

From a theoretical perspective, this challenge can be explained through the Resource-Based View (RBV), which posits that sustainable competitive advantage depends on the effective management of valuable, rare, and inimitable resources, particularly human capital (Barney, 1991). When workforce skills are misaligned with technological requirements, organizations experience capability deficiencies that directly undermine performance outcomes. Therefore, reducing skill gaps is not merely an operational concern but a strategic necessity, as failure to align human capital with technological change limits the organization's ability to fully leverage AI investments.

Building on this theoretical foundation, recent empirical studies emphasize the importance of adopting data-driven and predictive approaches to workforce planning. For instance, Parasa (2023) demonstrates that AI-enabled SWP enhances skills gap analysis and workforce forecasting by leveraging data analytics to identify future talent shortages and design targeted interventions. Similarly, Yanamala (2024) argues that traditional workforce planning approaches, which rely heavily on historical data and reactive decision-making, are insufficient in dynamic environments and must evolve into predictive, AI-driven systems capable of anticipating future workforce needs. These findings suggest that SWP is increasingly shifting from a static planning function to a dynamic and strategic capability.

Furthermore, sector-specific evidence from the banking industry highlights the urgency of this transformation. Okuku (2024) finds that digital transformation driven by FinTech innovation and mobile banking requires employees to develop advanced competencies such as data analytics, digital literacy, and strategic thinking. However, many banking institutions struggle to systematically identify and prepare for these emerging skill requirements, indicating that the core

problem lies not only in insufficient training but also in weak strategic workforce alignment. This reinforces the argument that without effective planning mechanisms, organizations are likely to experience persistent skill mismatches despite investing in new technologies.

In addition, emerging research highlights the growing role of AI technologies themselves in addressing workforce challenges. Halder et al. (2025) show that AI-driven systems can analyze labor market data, organizational performance metrics, and skill trends to identify emerging workforce gaps with greater accuracy. This suggests that integrating AI into workforce planning not only enhances forecasting capabilities but also enables organizations to respond more effectively to rapidly changing skill demands. Consequently, SWP becomes a critical mechanism for translating technological insights into actionable workforce strategies.

Overall, the literature consistently indicates that Strategic Workforce Planning reduces skill gaps by transforming workforce management from a reactive process into a proactive and predictive system. By anticipating future skill requirements, aligning training and development initiatives, and leveraging data-driven insights, SWP ensures that workforce capabilities evolve in parallel with technological change. Therefore, it can be argued that organizations with strong SWP practices are better positioned to minimize skill mismatches and enhance the effectiveness of AI adoption.

H1: Strategic Workforce Planning has a negative effect on skill gaps in AI adoption.

2.3 Strategic Workforce Planning and Workforce Capability Development

While Strategic Workforce Planning (SWP) has a direct influence on reducing skill gaps, its most critical impact occurs through workforce capability development, as planning alone does not create value unless it is translated into actionable human capital strategies. In AI-driven environments, where job roles evolve rapidly, organizations must continuously enhance employee competencies to remain competitive, making capability development a central outcome of effective workforce planning.

This relationship can be theoretically explained through Dynamic Capability Theory, which emphasizes an organization's ability to sense, seize, and reconfigure resources in response to environmental changes (Teece, 2007). In this context, SWP functions as a dynamic capability by enabling organizations to anticipate future skill requirements (sensing), design and implement training and reskilling programs (seizing), and realign workforce structures to match technological demands (reconfiguring). This dynamic process ensures that workforce capabilities evolve in parallel with technological transformation.

Empirical evidence further strengthens this argument. Upadhyay and Sharma (2025) demonstrate that AI-enabled workforce planning systems enhance organizational capability by providing predictive insights into skill requirements and enabling personalized learning pathways, thereby improving employee readiness for emerging roles. Similarly, Halder et al. (2025) highlight that organizations must continuously invest in employee development to adapt to AI-driven changes, as static skill sets quickly become obsolete in technology-intensive environments. In addition, AI-driven workforce analytics can identify hidden capability gaps and recommend targeted

interventions, allowing organizations to move beyond generic training approaches toward data-driven capability development strategies.

Moreover, SWP plays a critical role in fostering a continuous learning culture, which is essential for developing digital literacy, analytical thinking, and human–AI collaboration skills. As AI adoption increases, the ability of employees to interact effectively with intelligent systems becomes a key determinant of organizational success. Therefore, organizations that embed learning and development within their workforce planning processes are better positioned to build adaptive and future-ready workforces.

Overall, the literature indicates that SWP enhances workforce capability by transforming workforce development from an ad hoc activity into a strategic, continuous, and data-driven process.

H2: Strategic Workforce Planning has a significant positive effect on workforce capability development.

2.4 Workforce Capability Development and Skill Gaps

Workforce capability development is a critical mechanism for reducing skill gaps, as it directly addresses the mismatch between employees' existing competencies and the requirements of AI-driven job roles. In technologically advanced environments, skill gaps emerge not only due to the introduction of new technologies but also due to the inability of employees to adapt to these changes, making capability development essential for effective technology utilization.

This relationship can be understood through the lens of Socio-Technical Systems (STS) Theory, which argues that organizational performance depends on the alignment between technical systems (AI technologies) and social systems (human skills) (Trist, 1981). When employees lack the necessary skills to operate AI systems, a misalignment occurs, leading to inefficiencies, reduced productivity, and underutilization of technological investments. Therefore, improving workforce capability is essential for restoring this alignment and ensuring that technological innovations translate into performance outcomes.

Empirical evidence strongly supports this perspective. Okuku (2024) finds that workforce training and development significantly enhance organizational performance in the banking sector by improving employees' ability to engage with digital systems and strategic processes. Similarly, Halder et al. (2025) emphasize that skill development initiatives are essential for reducing workforce inefficiencies, particularly in environments where automation and AI reshape job roles. Furthermore, Upadhyay and Sharma (2025) show that AI-driven talent optimization systems improve employee performance by aligning skills with job requirements and offering personalized development pathways, thereby minimizing capability mismatches.

These findings suggest that skill gaps are fundamentally a capability problem rather than a purely technological issue, as the effectiveness of AI systems depends on the ability of employees to

utilize them. Consequently, organizations that invest in workforce capability development are more likely to successfully bridge the gap between technological potential and actual performance.

H3: Workforce capability development has a significant negative effect on skill gaps in AI adoption.

2.5 Mediating Role of Workforce Capability Development

Although Strategic Workforce Planning (SWP) is expected to directly reduce skill gaps, its impact is largely indirect and operates through workforce capability development, as planning activities must translate into tangible improvements in employee competencies to produce meaningful outcomes. In other words, SWP creates value not by itself but by enabling organizations to build and enhance human capital.

This mediating mechanism can be explained by integrating Resource-Based View (RBV) and Dynamic Capability Theory. From an RBV perspective, workforce capability represents a strategic resource that drives organizational performance, while Dynamic Capability Theory explains how organizations continuously reconfigure this resource to adapt to technological change. SWP acts as the mechanism that connects these two processes by identifying capability gaps and facilitating their development through targeted interventions.

Empirical studies reinforce this argument. Parasa (2023) emphasizes that workforce planning is only effective when it leads to actionable training and development strategies, highlighting that planning without execution does not improve organizational outcomes. Similarly, Upadhyay and Sharma (2025) argue that the benefits of AI-driven workforce planning are realized only when planning insights are translated into capability enhancement initiatives, rather than remaining at the analytical level. Furthermore, Halder et al. (2025) demonstrate that AI-enabled workforce planning improves performance by aligning training, recruitment, and capability development with predicted skill demands.

Therefore, workforce capability development serves as the key mechanism through which SWP influences skill gaps, linking strategic planning with actual workforce outcomes. This highlights the importance of not only designing effective workforce strategies but also ensuring their successful implementation through continuous learning and development initiatives.

H4: Workforce capability development mediates the relationship between Strategic Workforce Planning and skill gaps in AI adoption.

2.6 Moderating Role of Technological Turbulence

While Strategic Workforce Planning is expected to reduce skill gaps, the strength of this relationship may depend on the level of technological turbulence, defined as the rate and unpredictability of technological change within an organization's environment. In highly dynamic

environments, rapid advancements in AI technologies continuously alter skill requirements, increasing uncertainty and making workforce planning more challenging.

Yanamala (2024) argues that traditional workforce planning approaches struggle in such environments because they rely on historical data and static assumptions, which are inadequate for predicting rapidly evolving skill demands. Similarly, Halder et al. (2025) emphasize that continuous technological evolution increases uncertainty in workforce requirements, making it difficult for organizations to maintain alignment between skills and job roles.

Moreover, AI-driven transformation accelerates the pace of change, increasing the risk of skill obsolescence and reducing the effectiveness of long-term workforce planning strategies. In such contexts, even well-designed SWP systems may struggle to accurately forecast future needs, thereby weakening their ability to reduce skill gaps. Conversely, in more stable technological environments, workforce planning is likely to be more effective, as skill requirements change at a slower and more predictable pace.

Therefore, technological turbulence plays a critical role in shaping the effectiveness of Strategic Workforce Planning, influencing how strongly it can reduce skill gaps in AI adoption.

H5: Technological turbulence moderates the relationship between Strategic Workforce Planning and skill gaps in AI adoption.

3. Research Methodology

3.1 Introduction

The nature of the research problem—AI-driven workforce transformation—requires an understanding of both organizational practices and employee perceptions. On the one hand, organizations implement workforce planning strategies to align human resources with technological changes. On the other hand, employees experience these changes in terms of skill requirements, training opportunities, and job adaptation. Given this dual nature, a single-method approach would be insufficient. Therefore, this study adopts a mixed-methods design, combining qualitative and quantitative approaches to provide both in-depth insights and generalizable results. This integration enhances the robustness of the research by allowing triangulation of findings.

3.2 Research Philosophy

This study is grounded in a pragmatic research philosophy, which emphasizes practical problem-solving and the use of methods that best address the research objectives (Saunders et al., 2019). Pragmatism rejects the strict dichotomy between positivism and interpretivism and instead allows the researcher to combine different approaches to gain a comprehensive understanding of complex phenomena.

The issue of skill gaps in AI adoption is inherently multifaceted. It involves objective organizational elements, such as workforce planning practices, training systems, and AI implementation strategies, as well as subjective human experiences, including employee

perceptions of skill adequacy, readiness, and adaptability. A purely positivist approach would capture measurable relationships but overlook contextual insights, while a purely interpretivist approach would provide depth but lack generalizability.

Therefore, pragmatism is particularly suitable for this study, as it allows the integration of qualitative insights and quantitative evidence. By adopting this philosophy, the research aims not only to understand the problem but also to provide actionable recommendations for improving workforce readiness in AI-driven environments.

3.3 Research Approach

The study follows a deductive research approach, which involves developing hypotheses based on existing theories and testing them using empirical data. Theoretical frameworks such as the Resource-Based View (RBV), Dynamic Capability Theory, and Socio-Technical Systems (STS) Theory provide the foundation for understanding the relationships between Strategic Workforce Planning, workforce capability development, and skill gaps.

Based on these theories, hypotheses are formulated to examine how SWP influences workforce capability and, in turn, reduces skill gaps in AI adoption. Data is then collected and analyzed to test these hypotheses. This approach is appropriate because the study seeks to validate theoretical relationships in a specific empirical context, namely the banking sector of Bangladesh.

3.4 Research Design: Mixed Methods

This research adopts a mixed-methods design, which integrates qualitative and quantitative approaches in a sequential manner. The design consists of three main phases: the qualitative phase, the quantitative phase, and the integration phase.

The rationale for this design lies in the need to capture both the complexity of organizational practices and the measurable relationships between variables. The qualitative phase provides an in-depth understanding of how AI is adopted and how skill gaps emerge within organizations. The quantitative phase tests the relationships between key variables using statistical techniques. Finally, the integration phase combines findings from both approaches to generate comprehensive insights.

This design enhances the validity of the study by allowing triangulation, where findings from one method are cross-validated with findings from another.

3.5 Qualitative Phase

3.5.1 Purpose

The qualitative phase aims to explore the context of AI adoption and workforce challenges within Bangladeshi banks. Specifically, it seeks to understand how AI technologies are implemented, what types of skill gaps exist, and how organizations respond to these challenges through workforce planning strategies. This phase provides a contextual foundation for the study and helps refine the research instrument used in the quantitative phase.

3.5.2 Data Collection (Interviews)

Data for the qualitative phase is collected through semi-structured interviews with key organizational stakeholders, including HR managers, bank executives, and digital transformation specialists. These participants are selected because of their direct involvement in workforce planning and AI adoption processes.

Semi-structured interviews are chosen because they provide flexibility, allowing participants to share detailed insights while ensuring that key topics are covered. Approximately 10–15 interviews are conducted, which is considered sufficient to achieve data saturation in qualitative research.

3.5.3 Data Analysis

The collected data is analyzed using thematic analysis, which involves coding interview transcripts and identifying recurring patterns and themes. This process allows the researcher to systematically organize qualitative data and extract meaningful insights.

Key themes expected to emerge include the following:

- The extent and nature of AI adoption in banks
- The types of skill gaps experienced by employees
- Organizational responses, including training and workforce planning strategies

3.5.4 Output of Qualitative Phase

The qualitative phase produces a set of themes that provide a deeper understanding of the research problem. These findings are used to:

- Inform the design of the survey questionnaire
- Identify relevant variables and measurement items
- Provide contextual insights for interpreting quantitative results

3.6 Quantitative Phase

3.6.1 Purpose

The quantitative phase aims to test the hypothesized relationships between Strategic Workforce Planning, workforce capability development, and skill gaps. It provides empirical evidence on the strength and direction of these relationships.

3.6.2 Data Collection (Survey)

Data is collected with a structured questionnaire using a 5-point Likert scale, where respondents indicate their level of agreement with various statements. The survey is distributed online to ensure accessibility and a wider reach.

The target sample size is 200–300 respondents, which is sufficient for conducting advanced statistical analyses such as Structural Equation Modeling (SEM). Participants include bank employees, operational staff, and mid-level managers who are directly affected by AI adoption.

3.7 Sampling Strategy

The study employs a purposive sampling technique, where participants are selected based on their relevance to the research topic. Specifically, respondents must be involved in banking operations and have exposure to AI systems.

This approach ensures that the data collected is both relevant and reliable, as participants possess the necessary knowledge and experience to provide meaningful responses. Although purposive sampling may limit generalizability, it enhances the validity of findings within the specific context of the study.

3.8 Measurement of Variables

The study measures key constructs using established scales adapted from previous research.

- **Strategic Workforce Planning (SWP)** is measured through indicators such as workforce forecasting, alignment with organizational strategy, and training planning.
- **Workforce Capability Development** is measured through skill development initiatives, training effectiveness, and learning opportunities.
- **Skill Gaps** are measured as perceived gaps between employees' current skills and job requirements, particularly in relation to AI technologies.
- **Technological Turbulence** captures the rate and unpredictability of technological change.

These constructs are operationalized using multiple survey items to ensure reliability and validity.

3.9 Data Analysis Techniques

3.9.1 Quantitative Analysis

Quantitative data is analyzed using statistical software such as SPSS and AMOS.

The analysis follows a structured process:

- Descriptive statistics are used to summarize the data.

- Reliability is assessed using Cronbach's Alpha
- Validity is evaluated through measures such as Average Variance Extracted (AVE) and Composite Reliability.
- Structural Equation Modeling (SEM) is used to test the hypothesized relationships.
- Mediation analysis is conducted using bootstrapping techniques.
- Moderation analysis examines the effect of technological turbulence

3.9.2 Qualitative Analysis

Qualitative data is analyzed through thematic coding, where interview responses are categorized into themes. These themes are then compared with quantitative findings to identify consistencies and differences.

3.10 Integration of Findings

The integration phase is the most critical component of the mixed-methods design. It involves combining qualitative insights with quantitative results to provide a comprehensive understanding of the research problem.

For example, if interview findings indicate a lack of training and survey results show low workforce capability, these findings reinforce each other, increasing the credibility of the conclusions. Conversely, any inconsistencies are analyzed to provide deeper insights into organizational dynamics.

3.11 Ethical Considerations

The study adheres to strict ethical standards to ensure the protection of participants. Informed consent is obtained from all respondents, and participation is voluntary. Confidentiality and anonymity are maintained, and participants have the right to withdraw at any time. Data is used solely for academic purposes, and no sensitive organizational information is disclosed.

3.12 Reliability and Validity

To ensure the quality of the research, both reliability and validity are rigorously assessed. Reliability refers to the consistency of measurement and is evaluated using Cronbach's Alpha. Validity refers to the accuracy of measurement and includes content validity, construct validity, convergent validity, and discriminant validity.

4. Expected contribution and Limitation

4.1 Expected Contributions of the Study

This study aims to contribute to both theoretical knowledge and practical application in the field of workforce management and AI adoption, particularly within the context of emerging economies such as Bangladesh.

From a theoretical perspective, the study extends existing literature by integrating Strategic Workforce Planning (SWP) with AI-driven workforce transformation. While previous studies have examined workforce planning, skill development, or AI adoption independently, limited research has explored the direct relationship between SWP and skill gaps in AI adoption. By linking these constructs, this study contributes to a more comprehensive understanding of how organizations can strategically manage human capital in technologically evolving environments.

Furthermore, the study contributes to the application of established theories such as the Resource-Based View (RBV), Dynamic Capability Theory, and Socio-Technical Systems (STS) Theory in a new empirical context. It demonstrates how workforce capability can be considered a strategic resource (RBV), how organizations adapt to technological change through planning (Dynamic Capability), and how alignment between human and technological systems is essential for performance (STS). This integration provides a multi-theoretical explanation of workforce challenges in AI-driven environments.

From a methodological perspective, the study contributes by adopting a mixed-methods approach, combining qualitative insights with quantitative validation. This approach enhances the robustness of findings and provides a more nuanced understanding of organizational practices, which is often lacking in purely quantitative studies.

From a practical perspective, the study offers valuable insights for banking institutions and policymakers. It provides evidence-based recommendations on how organizations can improve workforce readiness by strengthening Strategic Workforce Planning practices. This includes better forecasting of skill requirements, targeted training programs, and alignment of HR strategies with digital transformation goals. Such insights are particularly relevant for banks in Bangladesh, where AI adoption is increasing but workforce preparedness remains a challenge.

4.2 Limitations of the Study

Despite its contributions, this study has several limitations that should be acknowledged.

First, the research adopts a cross-sectional design, meaning that data is collected at a single point in time. While this approach is suitable for identifying relationships between variables, it limits the ability to establish causality. AI adoption and workforce transformation are dynamic processes that evolve over time, and a longitudinal study could provide deeper insights into how skill gaps change as organizations adapt.

Second, the study relies on self-reported data, particularly in the quantitative phase. Respondents may provide socially desirable answers or may not accurately assess their own skill levels, which could introduce bias into the findings. Although this limitation is common in survey-based research, it may affect the precision of measurement.

Third, the use of purposive sampling restricts the generalizability of the findings. While this approach ensures that participants are relevant and knowledgeable, the results may not be fully

representative of all banking institutions or other industries. Future research could adopt probability sampling techniques to enhance generalizability.

Fourth, the study focuses exclusively on the banking sector in Bangladesh, which may limit its applicability to other sectors or geographical contexts. However, this focus is intentional, as it allows for a deeper understanding of a specific industry undergoing rapid digital transformation.

Finally, the study measures skill gaps as perceived skill gaps, rather than objective skill assessments. While perceptions are important for understanding employee readiness, they may not fully capture actual skill deficiencies. Future research could combine subjective and objective measures to provide a more comprehensive evaluation.

5. Conclusion

This research proposal outlines a structured framework to examine the role of Strategic Workforce Planning (SWP) in reducing skill gaps associated with Artificial Intelligence (AI) adoption in the banking sector of Bangladesh. The study responds to a critical challenge in contemporary organizations, where rapid technological advancement is often not matched by corresponding workforce capability development.

The proposal argues that AI adoption should be understood not only as a technological initiative but as a strategic workforce transformation process, requiring alignment between human capabilities and digital systems. Grounded in the Resource-Based View (RBV), Dynamic Capability Theory, and Socio-Technical Systems (STS) Theory, the study seeks to explain how workforce planning and capability development interact to address skill gaps.

By employing a mixed-methods approach, the study will generate both contextual insights and empirical evidence to examine the proposed relationships. It is expected to address key gaps in the literature, particularly the limited focus on the strategic role of workforce planning and the lack of context-specific research in emerging economies such as Bangladesh.

Overall, the study aims to contribute to both academic understanding and practical decision-making by providing a systematic approach to improving workforce readiness and supporting effective AI adoption.

Research Time Plan (24-Month Plan)

Phase	Timeline	Activities	Key Outputs
Phase 1: Research Proposal Development	Month 1–3	Refining research topic, preliminary literature review, development of research questions, hypotheses, and conceptual framework, proposal preparation, and approval	Approved research proposal
Phase 2: Comprehensive Literature Review	Month 4–7	Conducting in-depth literature review on AI adoption, SWP, and skill gaps; analyzing and synthesizing key theories (RBV, Dynamic Capability, STS)	Completed literature review chapter and refined conceptual model
Phase 3: Research Design & Instrument Development	Month 8–9	Finalizing research design, developing interview guide and survey questionnaire; pilot testing instruments	Validated data collection instruments
Phase 4: Qualitative Data Collection	Month 10–12	Conducting semi-structured interviews with HR managers, bank executives, and digital professionals; collecting qualitative data until saturation	Completed qualitative dataset
Phase 5: Qualitative Data Analysis	Month 13–14	Coding interview data; conducting thematic analysis; identifying key themes and patterns	Thematic findings and insights
Phase 6: Quantitative Data Collection	Month 15–17	Distributing a survey to bank employees (200–300 respondents) and collecting structured data.	Completed quantitative dataset
Phase 7: Quantitative Data Analysis	Month 18–20	Analyzing data using SPSS/SEM; conducting descriptive analysis, reliability, and validity tests; testing hypotheses (including mediation and moderation)	Statistical results and hypothesis testing outcomes
Phase 8: Integration & Interpretation	Month 21	Integrating qualitative and quantitative findings; comparing results; developing overall interpretation	Integrated findings and discussion insights
Phase 9: Writing & Finalization	Month 22–23	Writing a full thesis, linking findings with literature, developing recommendations, and proofreading	Final draft of thesis
Phase 10: Submission & Viva Preparation	Month 24	Final formatting, submission, and preparation for viva/presentation	Submitted thesis and viva readiness

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