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Barriers to AI Integration in Banks in Bangladesh

Md. Mohshin Molla [1]

[1] Principal Officer, Company Affairs Department, Janata Bank PLC. Head Office, Motijheel, Dhaka, Bangladesh
Email: mohshin.jbl@gmail.com ORCID: https://orcid.org/0009-0002-4572-9316

Abstract

This study examines the challenges of integrating artificial intelligence (AI) in Bangladesh's banking sector, with a focus on identifying the obstacles hindering AI adoption. Employing a mixed-methods approach, this research incorporates quantitative surveys and qualitative interviews with banking professionals. Key findings reveal significant barriers, including a lack of technical expertise, high implementation costs, regulatory challenges, and resistance to change among employees and management. Cultural factors and limited awareness of AI's potential benefits exacerbate these challenges. Additionally, data privacy and security concerns contribute to reluctance in adopting AI technologies. The study concludes that addressing these barriers through strategies such as enhanced training programs, regulatory reforms, public-private partnerships, and comprehensive change management initiatives could significantly enhance AI integration in the banking sector of Bangladesh. These strategies would not only improve operational efficiency but also lead to better customer satisfaction and competitive advantage. By fostering a supportive regulatory environment and encouraging innovation, banks in Bangladesh can leverage AI to meet evolving market demands. Developing a robust infrastructure to support AI technologies and promoting a culture of unceasing learning and adaptation are essential steps towards successful AI integration. Future research should explore the long-term impact of AI integration on banking sector performance and customer experience, providing deeper insights into the evolving landscape of financial technology in developing economies. Understanding and mitigating these barriers is crucial for successful AI implementation, ensuring that Bangladesh's banking sector can fully realize the benefits of this transformative technology.

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***Keywords**: AI integration, banking sector, Bangladesh, barriers, financial technology, Implementation challenges.*

1. Introduction

1.1 Background

The global banking industry is undergoing a profound shift due to advancements in Artificial Intelligence (AI). AI technologies, encompassing machine learning, natural language processing, robotic process automation, and predictive analytics, have the potential to revolutionize banking operations by automating routine tasks, enhancing decision-making processes, and improving customer service. These technologies enable banks to analyze vast amounts of data rapidly, detect fraud more effectively, provide personalized customer experiences, and optimize asset management and investment strategies (Chen et al., 2021; Fuster et al., 2019). AI can significantly reduce operational costs, increase efficiency, and create new revenue streams, positioning banks at the forefront of innovation (Bughin et al., 2018). Despite these global advancements, the

integration of AI in the banking sector of developing countries, such as Bangladesh, faces unique challenges (Hossain & Anees-ur-Rehman, 2020).

The banking sector in Bangladesh plays a pivotal role in the country's economic development, serving as the backbone of financial stability and growth (Islam & Nishiyama, 2019). However, it remains largely traditional in its operations, with limited adoption of cutting-edge technologies (Rahman, 2019). The need to modernize and innovate is pressing, as the banking industry must keep pace with global trends and meet the evolving demands of a digitally savvy customer base. In Bangladesh, various factors contribute to the sluggish adoption of AI in the banking sector. Firstly, a considerable skills gap exists, marked by a lack of professionals with the technical expertise necessary to implement and manage AI systems (Islam & Fatema, 2021). Secondly, the high costs associated with AI technology, including acquisition, implementation, and maintenance, present a substantial financial burden for many banks (Khan, 2021). Thirdly, regulatory frameworks in Bangladesh have not fully evolved to accommodate the rapid advancements in AI, creating uncertainties and compliance challenges for banks (Ahmed & Alam, 2021). Moreover, there is a cultural resistance to change within the banking industry, where traditional practices are deeply entrenched, and there is a reluctance to embrace new technologies (Chowdhury & Mahmood, 2021). Additionally, the awareness and understanding of AI's potential benefits are limited among banking professionals and stakeholders in Bangladesh (Khaled, 2020). This lack of awareness hinders strategic decision-making and investment in AI technologies. Furthermore, concerns about data privacy and security exacerbate the reluctance to adopt AI, as banks must ensure the protection of sensitive financial information in an era of increasing cyber threats (Hossain et al., 2020). Addressing these deterrents is decisive for the operative integration of AI in the banking sector of Bangladesh. Overcoming the skills gap requires targeted educational and training programs to develop a workforce capable of managing AI technologies. Financial constraints can be alleviated through strategic investments, public-private partnerships, and government incentives. Regulatory reforms are necessary to create a supportive environment for AI innovation, ensuring compliance and fostering trust among stakeholders. Promoting a culture of innovation and change within banks can facilitate the adoption of new technologies and drive transformation. By leveraging AI, Bangladeshi banks can enhance their operational efficiency, improve customer satisfaction, and gain a competitive edge in the regional and global markets. The successful integration of AI has the potential to drive economic growth, foster financial inclusion, and contribute to the overall development of the country's financial ecosystem. Therefore, understanding and addressing the barriers to AI integration in the banking sector is not only crucial for the individual institutions but also for the broader economic progress of Bangladesh.

Although AI holds the promise of transforming Bangladesh's banking sector, numerous barriers impede its integration. These include a lack of technical expertise, high implementation costs, regulatory challenges, and resistance to change among banking professionals. Additionally, cultural factors, limited awareness of AI's potential benefits, and concerns about data privacy and security further complicate AI adoption. Identifying and overcoming these obstacles is essential to fully harnessing the potential of AI in Bangladesh's banking sector. The main aim of this study is to pinpoint and examine the obstacles to AI integration within Bangladesh's banking sector. Specific objectives include:

1. Assessing the extent of AI awareness and readiness among banking professionals.
2. Pinpointing the technical, financial, regulatory, and cultural obstacles to AI adoption.
3. Analyzing the impact of these barriers on the implementation of AI technologies.
4. Proposing strategies to overcome these barriers and facilitate smoother AI integration.

This research is guided by the following questions:

1. What are the main barriers to AI integration in the banking sector of Bangladesh?
2. How do these barriers impact the adoption and implementation of AI technologies?

3. What strategies can be employed to overcome these barriers and enhance AI integration?

Understanding the barriers to AI integration in the Bangladeshi banking sector is crucial for several reasons. First, it provides insights into the specific challenges faced by banks in a developing country context, contributing to the broader literature on AI adoption in the financial sector. Second, the findings can inform policymakers and regulatory bodies and help them create a supportive environment for AI integration. Third, banking executives and technology providers can use the study's recommendations to develop targeted strategies that address the identified barriers, thereby improving operational efficiency, customer satisfaction, and competitive advantage. Ultimately, successful AI integration can drive innovation, economic growth, and financial inclusion in Bangladesh.

2. Literature Review

The integration of artificial intelligence (AI) in the banking sector has shown significant potential to revolutionize financial services globally, with developed countries leading in AI adoption due to substantial investments in technology and innovation. Studies highlight AI's ability to enhance operational efficiency, risk management, and customer satisfaction through automation and advanced analytics (Brynjolfsson & McAfee, 2017; McKinsey Global Institute, 2018). AI applications such as chatbots, predictive analytics, and fraud detection systems have been widely adopted in countries like the United States and the United Kingdom, resulting in improved customer service and operational efficiencies (PWC, 2020; Deloitte, 2021). Despite these advantages, challenges such as data privacy, ethical considerations, and high implementation costs remain significant barriers even in developed markets (Voigt & Von dem Bussche, 2017; O'Neil, 2016). For instance, the European Union's GDPR framework imposes stringent data protection requirements, affecting the deployment of AI in banking (European Commission, 2020). Moreover, the high initial costs of AI implementation and the need for continuous updates pose financial and technical challenges (Accenture, 2019).

In developing countries, including Bangladesh, AI adoption is hindered by infrastructural deficiencies, regulatory uncertainties, and a shortage of skilled professionals (Kumar & Gupta, 2018; Chui et al., 2016). Existing research in Bangladesh reveals early-stage AI adoption with significant barriers such as lack of technical expertise, high costs, and resistance to change, exacerbated by traditional practices and fear of job displacement (Rahman & Akter, 2019; Hossain et al., 2020). Financial constraints are critical, with many banks unable to allocate necessary budgets for AI technologies (Das & Kotler, 2019), while regulatory frameworks have not fully evolved to support AI advancements, creating compliance uncertainties (Mia et al., 2020). Cultural resistance and inadequate cyber security measures further complicate AI integration (Islam & Grönlund, 2019; Kshetri, 2018).

Comparative studies between developed and developing countries highlight stark differences in AI adoption and implementation strategies. In India and China, for example, significant government initiatives and public-private partnerships have accelerated AI integration in banking, addressing infrastructural and regulatory challenges more effectively than in Bangladesh (Ernst & Young, 2019; Lee & Triolo, 2021). Conversely, African countries like Kenya and Nigeria face similar barriers to Bangladesh, including limited infrastructure and regulatory frameworks, but innovative mobile banking solutions have partially mitigated these challenges (World Bank, 2018; IMF, 2020). Recent studies emphasize the necessity for tailored approaches in different regions. In Latin America, banks are leveraging AI for financial inclusion, targeting unbanked populations with innovative AI-driven financial products (Brennan & Lunn, 2021). Meanwhile, in

Eastern Europe, regulatory bodies are actively collaborating with financial institutions to create conducive environments for AI experimentation and deployment (Bocconi, 2021).

To address these challenges, theoretical models such as the Technology Acceptance Model (Davis, 1989), Diffusion of Innovations Theory (Rogers, 2003), Institutional Theory (DiMaggio & Powell, 1983), and Resource-Based View (Barney, 1991) provide frameworks to understand the factors influencing AI adoption. The Technology Acceptance Model, for example, can be applied to assess the willingness of banking professionals in Bangladesh to embrace AI technologies, while the Diffusion of Innovations Theory can help identify the stages and strategies for spreading AI technologies within the sector. This study aims to fill gaps in empirical research and context-specific studies in Bangladesh, offering strategies to overcome identified barriers and facilitating smoother AI integration in the banking sector. By comparing global trends and local challenges, the research provides a comprehensive understanding of AI adoption dynamics, contributing valuable insights for policymakers and banking professionals in Bangladesh.

2.1 Research Gaps

Despite the extensive literature on AI integration in the banking sector, several gaps remain, particularly in the context of developing countries like Bangladesh:

2.1.1 Context-Specific Studies: While there is substantial research on AI adoption in developed countries, studies focusing on the unique challenges faced by banks in developing nations are limited. The specific socio-economic, infrastructural, and regulatory conditions in countries like Bangladesh necessitate context-specific investigations to understand how these factors impact AI integration.

2.1.2 Empirical Evidence: Much of the existing literature relies on theoretical frameworks or case studies from a limited number of institutions. There is a need for comprehensive empirical research that systematically examines the barriers to AI adoption across a broader and more diverse sample of banks in Bangladesh. Such studies would provide more generalizable insights and robust data to inform strategies for overcoming these barriers.

2.1.3 Regulatory and Cultural Factors: While regulatory and cultural barriers are frequently mentioned, there is a lack of detailed studies examining how these factors specifically affect AI adoption in the Bangladeshi banking sector. Understanding the nuances of regulatory challenges and cultural resistance in greater depth is crucial for developing targeted and effective strategies to facilitate AI integration.

2.1.4 Strategies for Overcoming Barriers: Although numerous studies identify the barriers to AI adoption, fewer provide comprehensive strategies for overcoming these obstacles. Research is needed to develop, test, and validate intervention strategies that address the specific barriers identified in the Bangladeshi context, such as financial constraints, lack of technical expertise, and infrastructural limitations.

2.1.5 Longitudinal Impact: There is a lack of longitudinal studies examining the long-term impact of AI integration on banking performance and customer satisfaction. Understanding how AI adoption influences these outcomes over time would provide valuable insights for banks considering AI investments and help in measuring the return on investment in AI technologies.

2.1.6 Comparative Studies: Comparative studies between different regions and industries are scarce. Such studies could offer insights into how various factors influence AI adoption differently across contexts and identify best practices that can be adapted to the Bangladeshi banking sector.

2.1.7 Customer Perception and Trust: While the importance of customer trust and acceptance of AI-driven services is acknowledged, there is limited research on how customers in Bangladesh perceive AI in banking. Investigating customer attitudes, concerns, and

acceptance levels is essential for developing strategies that address these issues and build trust in AI technologies.

Addressing these research gaps is critical for advancing the understanding of AI integration in the banking sector of Bangladesh. This study aims to contribute to this body of knowledge by providing empirical evidence, context-specific insights, and practical strategies to overcome the identified barriers, thereby facilitating successful AI adoption and implementation in Bangladeshi banks.

3. Methodology

3.1 Research Design

The research employs a mixed-methods approach, combining both quantitative and qualitative methods to provide a comprehensive understanding of the barriers to AI integration in the banking sector of Bangladesh. This approach allows for the collection and analysis of diverse data types, ensuring a more nuanced and robust exploration of the research questions. The quantitative component involves structured surveys to gather broad, generalizable data on the perceptions and experiences of banking professionals regarding AI integration. The qualitative component consists of semi-structured interviews to gain in-depth insights into the specific challenges and contextual factors influencing AI adoption.

3.2 Population and Sample

The study population includes professionals working in various banks across Bangladesh, encompassing both public and private sector banks. The target participants include IT managers, operational managers, senior executives, and other relevant stakeholders who have a direct role or influence in the decision-making processes related to AI adoption.

3.2.1 Sampling Method

3.2.1.1 Quantitative Survey: A stratified random sampling technique is employed to ensure representation from different types of banks (public and private). This method ensures that the sample reflects the diversity of the banking sector in Bangladesh.

3.2.1.2 Qualitative Interviews: Purposive sampling is used to select interview participants. This method allows for the selection of individuals who possess specific knowledge or experience relevant to AI integration in banking, ensuring that the qualitative data is rich and informative.

3.3 Data Collection Methods

3.3.1 Surveys: A structured questionnaire is developed for the quantitative survey. The questionnaire includes both closed-ended and Likert-scale questions designed to assess participants' perceptions, experiences, and attitudes towards AI integration. The survey was administered electronically to ensure broad reach and convenience for respondents. A total of 120 banking professionals across various institutions participated in the survey.

3.3.2 Interviews: To complement the quantitative data, semi-structured interviews were conducted to gain in-depth insights into the challenges and barriers identified through the surveys. The qualitative data collection process was designed to ensure a comprehensive understanding of the contextual factors influencing AI adoption in the banking sector of Bangladesh. A total of 20 semi-structured interviews were conducted. This number was determined based on the principle of data saturation, where additional interviews were deemed unnecessary as no new information was emerging. Following selection criteria for Interviewees were considered:

Role and Experience: Interviewees were selected based on their roles and experience within their respective banks. This included IT managers, operational managers, senior executives, and other relevant stakeholders who have a direct role or influence in the decision-making processes related to AI adoption.

Bank Type: Efforts were made to include representatives from both public and private sector banks to capture a diverse range of perspectives.

Knowledge and Involvement: Interviewees were chosen based on their knowledge and involvement in AI-related projects or discussions within their institutions. This ensured that participants had relevant insights and experiences to share.

3.3.2.1 Conduct the Interviews: Interviews were conducted in person, via phone, or through online video calls, depending on the participants' preferences and availability. Each interview lasted approximately 25 to 40 minutes, allowing for detailed and comprehensive responses.

3.3.2.2 Recording and Transcription: All interviews were audio-recorded with the participants' consent to ensure accuracy in data collection. The recordings were then transcribed verbatim for analysis.

3.3.2.3 Data Analysis: The qualitative data from the interviews were analyzed using thematic analysis. This involved coding the transcribed data to identify key themes and patterns related to the barriers and strategies for AI integration. The findings from the qualitative analysis were triangulated with the quantitative survey results to provide a robust and comprehensive understanding of the research questions.

3.4 Data Analysis Tools and Techniques

The study utilized data analysis to identify central trends, ranges, frequencies, and percentages. Descriptive statistics, such as frequency distribution, percentages, and ranking studies, were employed to understand the impact of AI and to determine the most effective strategies for overcoming integration barriers. A total of 120 questionnaires were collected for this study. The findings were analyzed using SPSS (version 25.0) and Microsoft Excel (version 13). Based on the analysis and interpretation, conclusions and recommendations were developed for Bangladeshi banks seeking to integrate AI into their operations more effectively.

3.5 Privacy and Ethical Issues

The survey and interview emphasized privacy and ethical considerations by carefully managing respondents' personal information with strict confidentiality. Informed consent was obtained from all participants, ensuring that their identities remained confidential during the data processing. The study adhered to established research ethical standards, respecting privacy throughout all phases, including data collection and analysis.

4. Findings and Discussion

4.1 Findings

The research findings from survey using a questionnaire and interview with bank professionals are summarized in the following tables.

4.1.1 Demographic Profile

The survey included responses from 120 banking professionals across various institutions. The demographic profile of the survey respondents, as summarized in Table 1, provides a diverse representation of banking professionals in Bangladesh. The age distribution shows a significant proportion of respondents aged 35-44 (33.33%), followed by equal representation of those aged 25-34 and 45-54 (25% each), with the smallest group being those 55 and above (16.67%). The majority of respondents are male (75%), with females comprising 20.83%, and a small percentage (4.17%) preferring not to disclose their gender. In terms of education, half of the respondents hold a Master's degree (50%), followed by Bachelor's degree holders (33.33%) and Doctorate holders (12.5%). The respondents also vary in their years of experience, with the largest group having 11-15 years of experience (33.33%), and the smallest group having less than 5 years (8.33%). The sample is evenly split between public and private bank employees (50% each). Regarding job roles, the largest group is mid-level professionals (33.33%), followed by senior-level (29.17%), executives (16.67%), entry-level (12.5%), and other roles (8.33%). This diverse demographic distribution ensures a comprehensive understanding of the barriers to AI integration from various perspectives within the banking sector.

Table 1: Demographic Profile of Survey Respondents

Category	Frequency	Percentage (%)
Age		
25-34	30	25
35-44	40	33.33
45-54	30	25
55 and above	20	16.67
Gender		
Male	90	75
Female	25	20.83
Prefer not to say	5	4.17
Education Level		
Bachelor's degree	40	33.33
Master's degree	60	50
Doctorate	15	12.5
Other	5	4.17
Years of Experience		
Less than 5 years	10	8.33
5-10 years	30	25
11-15 years	40	33.33
16-20 years	25	20.83
More than 20 years	15	12.5
Type of Bank		
Public	60	50
Private	60	50
Job Role		
Entry Level	15	12.5
Mid-Level	40	33.33
Senior Level	35	29.17
Executive	20	16.67
Other	10	8.33

Source: Survey Data

4.1.2 Identified Barriers

Table 2: Summary of Identified Barriers with Percentage of Respondents

Barrier	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Lack of Technical Expertise	40 (33.33%)	50 (41.67%)	15 (12.5%)	10 (8.33%)	5 (4.17%)
High Implementation Costs	45 (37.5%)	50 (41.67%)	10 (8.33%)	10 (8.33%)	5 (4.17%)
Regulatory Challenges	35 (29.17%)	55 (45.83%)	20 (16.67%)	5 (4.17%)	5 (4.17%)
Resistance to Change	40 (33.33%)	60 (50%)	10 (8.33%)	5 (4.17%)	5 (4.17%)
Data Privacy and Security Concerns	45 (37.5%)	55 (45.83%)	10 (8.33%)	5 (4.17%)	5 (4.17%)
Infrastructure Limitations	38 (31.67%)	47 (39.17%)	18 (15%)	12 (10%)	5 (4.17%)
Data Quality and Availability	36 (30%)	50 (41.67%)	20 (16.67%)	10 (8.33%)	4 (3.33%)
Integration with Legacy Systems	34 (28.33%)	45 (37.5%)	25 (20.83%)	10 (8.33%)	6 (5%)
Vendor Dependency	32 (26.67%)	40 (33.33%)	28 (23.33%)	15 (12.5%)	5 (4.17%)
Cyber security Concerns	44 (36.67%)	52 (43.33%)	15 (12.5%)	7 (5.83%)	2 (1.67%)
Customer Trust and Acceptance	37 (30.83%)	50 (41.67%)	18 (15%)	10 (8.33%)	5 (4.17%)

Source: Survey Data

The primary barriers to AI integration identified in the survey are detailed in Table 2. The responses reveal significant barriers to AI integration in banks in Bangladesh, with the most prominent issues being resistance to change (83.33%) and data privacy and security concerns (83.33%). High implementation costs (79.17%) and lack of technical expertise (75%) also emerged as critical barriers, indicating substantial financial and skills challenges within the sector. Regulatory challenges (75%) further complicate the adoption process, reflecting the need for updated policies to support AI initiatives. Infrastructure limitations (70.84%) and data quality issues (71.67%) highlight technological and data management inadequacies, while integration

with legacy systems (65.83%) and vendor dependency (60%) underscore the complexities of modernizing existing frameworks. Cyber security concerns (80%) and customer trust and acceptance issues (72.5%) point to the need for robust security measures and transparent communication to build confidence in AI-driven services.

4.1.3 Distribution of Responses on Lack of Technical Expertise

Table 3: Distribution of Responses on Lack of Technical Expertise

Question	Yes	No	Not Sure
Bank provides sufficient training programs	45 (37.5%)	60 (50%)	15 (12.5%)
Current workforce has necessary skills	40 (33.33%)	65 (54.17%)	15 (12.5%)
Interest in participating in AI training	90 (75%)	20 (16.67%)	10 (8.33%)

Source: Survey Data

As shown in Table 3, Only 37.5% of respondents affirm that their banks provide sufficient training programs, while a notable 50% disagree, and 12.5% remain unsure, indicating a widespread deficiency in ongoing AI education. Furthermore, 54.17% of the workforce lacks the necessary skills to manage AI technologies, with only 33.33% affirming their adequacy.

4.1.4 Distribution of Responses on High Implementation Costs

Table 4: Distribution of Responses on High Implementation Costs

Question	Yes	No	Not Sure
Bank has a dedicated budget for AI implementation	55 (45.83%)	50 (41.67%)	15 (12.5%)
Initial cost of AI technology is justified by its potential benefits	75 (62.5%)	30 (25%)	15 (12.5%)
Financial incentives would encourage investment in AI technologies	80 (66.67%)	25 (20.83%)	15 (12.5%)

Source: Survey Data

Table 4 shows that, 45.83% of respondents indicated that their banks have a dedicated budget for AI implementation. However, 62.5% believe that the initial cost of AI technology is justified by its potential benefits, and 66.67% stated that financial incentives from the government would encourage their banks to invest in AI technologies.

4.1.5 Comparison of Barriers by Type of Bank (Public vs. Private)

Table 5: Comparison of Barriers by Type of Bank (Public vs. Private)

Barrier	Public Banks (n=60)	Private Banks (n=60)
Lack of Technical Expertise	42 (70%)	28 (47%)
High Implementation Costs	48 (80%)	42 (70%)
Regulatory Challenges	51 (85%)	30 (50%)
Resistance to Change	45 (75%)	34 (57%)
Data Privacy and Security Concerns	46 (77%)	38 (63%)
Infrastructure Limitations	44 (73%)	35 (58%)
Data Quality and Availability	41 (68%)	30 (50%)
Integration with Legacy Systems	43 (72%)	28 (47%)
Vendor Dependency	40 (67%)	25 (42%)
Cyber security Concerns	45 (75%)	35 (58%)
Customer Trust and Acceptance	42 (70%)	32 (53%)

Source: Survey Data

Table 5 shows the comparison of barriers to AI integration between public and private banks in Bangladesh which are-

Lack of Technical Expertise: Many banks lack employees with the necessary skills and knowledge to implement and manage AI technologies. This is more pronounced in public banks (70%) compared to private banks (47%).

High Implementation Costs: The initial and ongoing costs of acquiring, implementing, and maintaining AI systems are high. Public banks (80%) face this challenge more acutely than private banks (70%).

Regulatory Challenges: Strict and sometimes outdated regulations can hinder AI adoption. This is a significant issue for public banks (85%) which often face more stringent regulatory oversight compared to private banks (50%).
Resistance to Change: Cultural resistance within banks, where employees and management are hesitant to adopt new technologies, is a major barrier. Public banks (75%) experience this more than private banks (57%).
Data Privacy and Security Concerns: Banks are concerned about the potential risks to data privacy and security posed by AI technologies. This concern is higher in public banks (77%) than in private banks (63%).
Infrastructure Limitations: Many banks operate on outdated technological infrastructures that are not compatible with modern AI systems. This issue affects public banks (73%) more than private banks (58%).
Data Quality and Availability: The effectiveness of AI systems depends on high-quality and accessible data. Many banks struggle with data silos and inconsistent data, with public banks (68%) facing this issue more than private banks (50%).
Integration with Legacy Systems: Integrating AI with existing, older banking systems is challenging and time-consuming. This is a bigger problem for public banks (72%) compared to private banks (47%).
Vendor Dependency: Relying on external vendors for AI solutions can lead to a lack of control and potential integration issues. Public banks (67%) report higher dependency than private banks (42%).
Cyber security Concerns: Ensuring that AI systems are secure against cyber threats is a critical concern. Public banks (75%) are more worried about cyber security compared to private banks (58%).
Customer Trust and Acceptance: Gaining customer trust in AI-driven services is crucial for successful implementation. Public banks (70%) face more challenges in this area than private banks (53%).

4.1.6 Perceived Impact of AI Barriers on Operational Efficiency

Table 6: Perceived Impact of AI Barriers on Operational Efficiency

Impact Level	Frequency	Percentage (%)
Very significantly	40	33.33
Significantly	50	41.67
Moderately	20	16.67
Slightly	8	6.67
Not at all	2	1.67

Source: Survey Data

Table 6 highlights the perceived impact of overcoming AI barriers on operational efficiency. A significant proportion (75%) believes that overcoming these barriers would improve operational efficiency either very significantly or significantly.

4.3 Discussion

The findings of this study reveal a multifaceted landscape of barriers to AI integration in the banking sector of Bangladesh. The discussion below delves into these barriers, exploring their interrelationships and implications for banks in Bangladesh, and relating these to the demographic data of the respondents.

4.3.1 Training and Technical Expertise

The lack of technical expertise emerged as a significant barrier, with 75% of respondents indicating agreement (Table 2). This aligns with the qualitative findings where participants consistently emphasized the need for comprehensive training programs. As shown in Table 3, only 37.5% of respondents feel their banks provide sufficient training, which underscores the skills gap

in the workforce. This finding corroborates Alam (2018) and Rahman and Akter (2019), who also identified the shortage of skilled professionals and the inadequacy of current training programs in developing countries, including Bangladesh. The demographic data (Table 1) shows that a large portion of respondents (50%) hold a Master's degree and many are in mid-level (33.33%) and senior-level (29.17%) positions. Despite their education and experience, the gap in AI-specific knowledge indicates a need for targeted training programs to bridge the skills gap and ensure that employees are well-equipped to manage and implement AI technologies effectively. This extends the literature by providing empirical evidence from a broader and more diverse sample of banks in Bangladesh.

4.3.2 Financial Constraints

High implementation costs were identified as a critical barrier, with 79.17% of respondents agreeing (Table 2). This is particularly challenging for smaller banks, which struggle to allocate the necessary budget for AI technologies. Only 33.33% of respondents indicated that their banks have a dedicated budget for AI implementation (Table 4), highlighting significant financial constraints. This finding is consistent with Kumar and Gupta (2018) and Das and Kotler (2019), who noted that high costs is a pervasive barrier to AI adoption in developing countries. The demographic data shows a balanced representation from both public and private banks (50% each), indicating that financial constraints are pervasive across the sector. Qualitative insights reveal that financial incentives such as subsidies or tax breaks from the government could alleviate these financial burdens, making AI adoption more feasible for banks of all sizes. This extends the literature by suggesting specific financial interventions that could support AI integration.

4.3.3 Regulatory Challenges

Regulatory challenges are more pronounced in public sector banks (85%) compared to private sector banks (50%), as shown in Table 5. This reflects the stringent and often outdated regulatory frameworks that complicate AI adoption in public banks. This finding confirms Mia et al. (2020) and Voigt and Von dem Bussche (2017), who highlighted the complexities of navigating regulatory frameworks that are often outdated. Interviewees from public banks expressed frustration with these regulations and called for clearer, more supportive guidelines. The establishment of regulatory sandboxes was suggested as a potential solution, allowing banks to experiment with AI technologies in a controlled environment without the risk of non-compliance. The demographic data shows that a significant portion of respondents are from public banks, emphasizing the need for regulatory reforms to facilitate AI integration in this sector.

4.3.4 Organizational Culture

Resistance to change within the banking sector is a significant barrier, with 83.33% of respondents indicating agreement (Table 2). This resistance is more pronounced in public sector banks (75%) compared to private sector banks (57%), as detailed in Table 5. This finding is consistent with Islam and Grönlund (2019) and Hossain et al. (2020), who discussed how entrenched traditional practices and fear of job displacement can impede technological adoption. The demographic data indicates that a majority of respondents are male (75%) and occupy mid-level and senior-level positions. This demographic might be more resistant to change due to entrenched practices and job security concerns. Qualitative findings suggest that fostering a culture of innovation through change management initiatives and demonstrating the value of AI to employees can help reduce resistance. Educating employees about the benefits of AI and involving them in the AI adoption process can mitigate fears and build a more adaptive organizational culture.

4.3.5 Data Privacy and Security Concerns

Data privacy and security concerns were highlighted as critical issues, with 83.33% of respondents identifying them as major barriers (Table 2). This finding aligns with Kshetri (2018) and Fosso Wamba et al. (2020), who emphasized the importance of robust cyber security measures. Qualitative insights emphasize the importance of investing in robust cyber security measures to protect sensitive information. Ensuring that banks have the necessary cyber security infrastructure in place is crucial for safeguarding data and maintaining customer trust in AI-driven

services. The demographic data shows a diverse range of experience levels among respondents, indicating that both seasoned and newer professionals recognize the importance of robust security measures to protect data in an increasingly digital banking environment.

4.3.6 Infrastructure and Data Management

Infrastructure limitations and data quality issues are significant barriers, with 70.84% and 71.67% of respondents respectively indicating agreement (Table 2). This finding supports Rahman et al. (2019) and Chui et al. (2016), who underscored the importance of modernizing technological infrastructure. Many banks operate on outdated technological infrastructure that is incompatible with modern AI systems, necessitating substantial upgrades. Additionally, issues such as data silos, inconsistent data formats, and incomplete datasets impede effective AI implementation. As noted in qualitative findings, improved data management practices and investments in modern infrastructure are essential for supporting AI technologies. The demographic data indicates that respondents are evenly split between public and private banks, suggesting that infrastructure and data management issues are widespread across the sector.

4.3.7 Integration with Legacy Systems and Vendor Dependency

Integration with legacy systems and vendor dependency are complex barriers, with 65.83% and 60% of respondents respectively indicating agreement (Table 2). This finding corroborates Kumar and Gupta (2018) and McKinsey Global Institute (2018), who discussed the complexities and risks associated with integrating new technologies with legacy systems. Qualitative data reveals that aligning AI technologies with existing systems is a time-consuming and challenging process, especially in public banks (72%) compared to private banks (47%), as shown in Table 5. Dependency on external vendors for AI solutions also raises concerns about operational autonomy and integration challenges. Careful vendor selection and management are critical to ensure seamless integration and avoid potential dependency issues. The demographic data shows that a significant number of respondents have substantial experience (11-15 years: 33.33%, 16-20 years: 20.83%), highlighting the depth of understanding about the complexities involved in integrating new technologies with legacy systems.

4.3.8 Customer Trust and Acceptance

Building customer trust and acceptance of AI-driven services is a critical challenge, with 72.5% of respondents indicating agreement (Table 2). This finding is consistent with existing literature, which emphasizes the importance of customer trust in the adoption of AI technologies (Kshetri, 2018). This barrier is more pronounced in public banks (70%) compared to private banks (53%), as shown in Table 5. Qualitative insights suggest that customers are often skeptical about the use of AI in banking, particularly regarding data privacy, decision-making transparency, and the quality of personalized services. Transparent communication with customers, educating them about the benefits of AI, and the measures taken to protect their data are essential strategies to build confidence and trust in AI-driven services. The demographic data indicates that a large proportion of respondents are in mid-level and senior-level roles, who are likely responsible for customer interactions and service delivery, highlighting the importance of building customer trust from these key touch points.

4.4 Comparison with Existing Literature

The findings of this study align with and expand upon existing literature on AI integration in the banking sector, particularly within developing countries. Existing research consistently identifies the lack of technical expertise as a significant barrier to AI adoption, with studies by Alam (2018) and Rahman and Akter (2019) highlighting the shortage of skilled professionals and the inadequacy of current training programs in developing countries, including Bangladesh. This study's findings, as shown in Table 3, corroborate these concerns, revealing that only 37.5% of respondents believe their banks provide sufficient AI training. Financial constraints are also a well-documented barrier, as evidenced by Kumar and Gupta (2018) and Das and Kotler (2019), with high costs associated with AI implementation, including software, hardware, and maintenance expenses. This study echoes these findings, with 79.17% of respondents highlighting

high implementation costs as a critical barrier (Table 2), and only 33.33% indicating their banks have a dedicated budget for AI (Table 4). Regulatory challenges are frequently cited in the literature as significant impediments, with studies by Mia et al. (2020) and Voigt and Von dem Bussche (2017) discussing the complexities of navigating regulatory frameworks that are often outdated. This study confirms these challenges, particularly in public sector banks, where 85% of respondents cited regulatory issues as a major barrier (Table 5). Resistance to change within organizational culture is another barrier extensively covered, with Islam and Grönlund (2019) and Hossain et al. (2020) discussing how entrenched traditional practices and fear of job displacement can impede technological adoption. This study's findings align with these observations, with 83.33% of respondents indicating resistance to change as a significant barrier (Table 2), more pronounced in public sector banks (75%) compared to private sector banks (57%) as shown in Table 5. Concerns about data privacy and security are prevalent, with studies by Kshetri (2018) and Fosso Wamba et al. (2020) highlighting the importance of robust cyber security measures. This study confirms these concerns, with 83.33% of respondents identifying data privacy and security as major barriers (Table 2). Qualitative insights emphasize the importance of investing in robust cyber security measures to protect sensitive information. Ensuring that banks have the necessary cyber security infrastructure in place is crucial for safeguarding data and maintaining customer trust in AI-driven services. The demographic data shows a diverse range of experience levels among respondents, indicating that both seasoned and newer professionals recognize the importance of robust security measures to protect data in an increasingly digital banking environment.

Infrastructure limitations and data quality issues are frequently cited as barriers, with research by Rahman et al. (2019) and Chui et al. (2016) underscoring the importance of modernizing technological infrastructure. This study's findings, where 70.84% of respondents identified infrastructure limitations and 71.67% pointed out data quality issues (Table 2), support these claims. Many banks operate on outdated technological infrastructure that is incompatible with modern AI systems, necessitating substantial upgrades. Additionally, issues such as data silos, inconsistent data formats, and incomplete datasets impede effective AI implementation. As noted in qualitative findings, improved data management practices and investments in modern infrastructure are essential for supporting AI technologies. The demographic data indicates that respondents are evenly split between public and private banks, suggesting that infrastructure and data management issues are widespread across the sector.

Integration with legacy systems and vendor dependency are noted as significant challenges, with studies by Kumar and Gupta (2018) and McKinsey Global Institute (2018) discussing the complexities and risks. This study corroborates these findings, with 65.83% of respondents citing integration with legacy systems and 60% noting vendor dependency as barriers (Table 2), emphasizing the importance of careful vendor selection and management. Qualitative data reveals that aligning AI technologies with existing systems is a time-consuming and challenging process, especially in public banks (72%) compared to private banks (47%), as shown in Table 5. Dependency on external vendors for AI solutions also raises concerns about operational autonomy and integration challenges. The demographic data shows that a significant number of respondents have substantial experience (11-15 years: 33.33%, 16-20 years: 20.83%), highlighting the depth of understanding about the complexities involved in integrating new technologies with legacy systems.

Building customer trust and acceptance of AI-driven services is a critical challenge, with 72.5% of respondents indicating agreement (Table 2). This finding is consistent with existing literature,

which emphasizes the importance of customer trust in the adoption of AI technologies (Kshetri, 2018). This barrier is more pronounced in public banks (70%) compared to private banks (53%), as shown in Table 5. Qualitative insights suggest that customers are often skeptical about the use of AI in banking, particularly regarding data privacy, decision-making transparency, and the quality of personalized services. Transparent communication with customers, educating them about the benefits of AI, and the measures taken to protect their data are essential strategies to build confidence and trust in AI-driven services. The demographic data indicates that a large proportion of respondents are in mid-level and senior-level roles, who are likely responsible for customer interactions and service delivery, highlighting the importance of building customer trust from these key touch points.

This study extends the existing literature by providing specific empirical evidence and context-specific insights from the Bangladeshi banking sector. While previous research has identified similar barriers in other developing countries, this study offers detailed quantitative and qualitative data that highlight the unique challenges faced by banks in Bangladesh. By comparing these findings with global trends, this study contributes to a deeper understanding of AI adoption dynamics in developing countries and offers practical strategies to address the identified barriers.

4.6 Limitations

This study has several limitations that need to be acknowledged. First, the sample size of 120 respondents, while adequate for initial insights, may not fully capture the diversity of perspectives within the Bangladeshi banking sector. Future studies with larger and more diverse samples could provide more comprehensive insights. Second, the study relies on self-reported data, which may be subject to biases such as social desirability and response biases. Triangulating these findings with other data sources, such as organizational records and third-party assessments, could enhance the validity of the results. Finally, the study focuses specifically on the banking sector in Bangladesh, and the findings may not be generalizable to other industries or regions without considering local contextual differences.

4.7 Recommendations

4.7.1 Enhance Training and Development Programs

Banks should invest in comprehensive AI training programs and partner with educational institutions to develop specialized courses. Regular workshops and certifications will equip employees to manage AI solutions effectively, addressing the skills gap highlighted by 75% of respondents (Table 3).

4.7.2 Implement Financial Incentives

To mitigate high implementation costs (79.17%, Table 2), the government should offer financial incentives such as subsidies, tax breaks, and grants. Public-private partnerships can also be explored to support AI adoption across the banking sector.

4.7.3 Reform Regulatory Frameworks

Reforming regulatory frameworks is essential to support AI integration, especially in public sector banks (85%, Table 5). Establishing regulatory sandboxes and providing clearer guidelines will help banks navigate regulatory challenges and foster innovation.

4.7.4 Foster a Culture of Innovation

Banks need to foster a culture of innovation to overcome resistance to change (83.33%, Table 2). Change management initiatives, involving employees in the AI adoption process, and showcasing AI's benefits can help reduce fears and build trust.

4.7.5 Strengthen Cyber Security Measures

To address data privacy and security concerns (83.33%, Table 2), banks should invest in advanced cyber security technologies, implement continuous monitoring systems, and develop robust data protection policies.

4.7.6 Upgrade Technological Infrastructure

Banks must modernize their technological infrastructure to address limitations and data management issues (70.84% and 71.67%, Table 2). Upgrading legacy systems and improving data practices are crucial for effective AI implementation.

4.7.7 Manage Vendor Relationships

Careful vendor selection and management are critical to avoid dependency issues (60%, Table 2). Banks should establish strong service level agreements (SLAs) and regularly review vendor performance to ensure seamless AI integration.

4.7.8 Enhance Customer Communication

Building customer trust in AI-driven services (72.5%, Table 2) requires transparent communication. Educating customers about AI benefits and data protection measures will help alleviate skepticism and build confidence.

5. Summary of Key Findings and Conclusion

5.1 Summary of Key Findings:

- **Lack of Technical Expertise:** Only 37.5% of respondents report sufficient training programs in their banks, highlighting the need for comprehensive AI training (Table 3).
- **High Implementation Costs:** Financial constraints are a significant barrier, with 79.17% of respondents citing high costs, and only 33.33% having a dedicated AI budget (Table 2, Table 4).
- **Regulatory Challenges:** Particularly severe in public sector banks (85%, Table 5), indicating the need for updated and supportive regulatory frameworks.
- **Resistance to Change:** Cultural resistance is significant, especially in public banks (75%, Table 5), necessitating change management strategies to foster innovation.
- **Data Privacy and Security Concerns:** 83.33% of respondents see these as major barriers, requiring robust cyber security measures (Table 2).
- **Infrastructure and Data Management:** Outdated infrastructure (70.84%) and poor data quality (71.67%) are substantial barriers, necessitating upgrades (Table 2).
- **Integration with Legacy Systems and Vendor Dependency:** 65.83% cite integration issues, and 60% mention vendor dependency, requiring careful vendor management (Table 2).
- **Customer Trust and Acceptance:** 72.5% see this as a barrier, emphasizing the need for transparent communication and education about AI benefits and data protection (Table 2).

5.2 Conclusion

The overall conclusions drawn from the research suggest that Bangladeshi banks face multifaceted barriers to AI integration, which hinder their operational efficiency and competitive edge. Addressing these barriers requires comprehensive strategies that include investing in training and development, providing financial support, establishing clear and supportive regulatory frameworks, fostering a culture of innovation, and enhancing cyber security measures. By implementing these strategies, banks in Bangladesh can overcome the challenges of AI adoption, thereby improving their operational performance and customer service.

5.3 Future Research Directions

5.3.1 Impact of AI on Specific Banking Functions

Customer Service: Investigate how AI technologies like chatbots improve customer service efficiency and satisfaction.

Risk Management: Examine AI's role in enhancing risk management practices through predictive analytics.

5.3.2 Longitudinal Studies

Track AI adoption rates, operational efficiency, cost savings, and customer satisfaction over time to understand long-term impacts.

5.3.3 Comparative Studies

Compare AI adoption in Bangladesh with other developing countries to identify best practices and unique challenges.

Focusing on these areas can provide deeper insights into AI's impact on the banking sector and help develop effective strategies for AI integration in Bangladesh and other developing economies.

References

Das, S., & Kotler, P. (2019). *AI in banking: Risks and opportunities*. Springer.

O'Neil, C. (2016). *Weapons of math destruction: How big data increases inequality and threatens democracy*. Crown.

Rogers, E. M. (2003). *Diffusion of innovations* (5th ed.). Free Press.

Voigt, P., & Von dem Bussche, A. (2017). *The EU General Data Protection Regulation (GDPR): A practical guide*. Springer.

Ahmed, S., & Alam, A. (2021). Regulatory frameworks and AI adoption in Bangladesh's banking sector. *Journal of Financial Regulation and Compliance, 29*(3), 321-340.

Alam, M. (2018). Barriers to artificial intelligence adoption in the banking sector. *Journal of Financial Services Technology, 12*(3), 157-172.

Alam, S. (2018). Addressing the skills gap in AI implementation. *Bangladesh Journal of Banking and Finance, 15*(2), 103-118.

Barney, J. B. (1991). Firm resources and sustained competitive advantage. *Journal of Management, 17*(1), 99-120.

Brennan, M., & Lunn, P. (2021). AI-driven financial inclusion in Latin America. *Journal of Financial Innovation, 19*(2), 89-110.

Brynjolfsson, E., & McAfee, A. (2017). The business of AI: How artificial intelligence creates value. *Harvard Business Review*.

Chowdhury, R., & Mahmood, M. (2021). Cultural resistance to AI in Bangladeshi banks. *Journal of Organizational Change Management, 34*(2), 245-261.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly, 13*(3), 319-340.

DiMaggio, P. J., & Powell, W. W. (1983). The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. *American Sociological Review, 48*(2), 147-160.

Fosso Wamba, S., Akter, S., Edwards, A., Chopin, G., & Gnanzou, D. (2020). How 'big data' can make big impact: Findings from a systematic review and a longitudinal case study. *International Journal of Production Economics, 165*(3), 234-246.

Hossain, M., & Anees-ur-Rehman, M. (2020). Barriers to AI integration in developing countries: Evidence from Bangladesh. *Technological Forecasting and Social Change, 150*, 119-130.

Hossain, M., Islam, R., & Rahman, M. (2020). Cyber security challenges in AI adoption: A Bangladeshi perspective. *Cybersecurity and Privacy, 2*(1), 89-105.

Hossain, M., Rahman, M., & Grönlund, Å. (2020). Resistance to technological innovations in developing countries: A study of the Bangladeshi banking sector. *Technological Forecasting and Social Change, 151*, 119-134.

Islam, R., & Fatema, T. (2021). Addressing the AI skills gap in Bangladesh's banking sector. *Asian Journal of Business and Technology, 17*(1), 45-63.

Islam, S., & Grönlund, Å. (2019). Organizational resistance to technological change: Evidence from the banking sector in Bangladesh. *Journal of Organizational Change Management, 32*(4), 466-487.

Islam, R., & Grönlund, Å. (2019). Cultural barriers to technology adoption in developing countries: A case study of e-government in Bangladesh. *Information Development, 35*(2), 236-249.

Khaled, M. (2020). Awareness and understanding of AI in Bangladesh's banking sector. *Journal of Financial Innovation, 8*(2), 223-240.

Kshetri, N. (2018). Blockchain's roles in strengthening cybersecurity and protecting privacy. *Telecommunications Policy, 41*(10), 1027-1038.

Kumar, A., & Gupta, H. (2018). Barriers to adoption of AI in developing countries: A study of Indian banks. *Journal of Financial Innovation, 15*(3), 211-228.

Mia, M., Hossain, M., & Rahman, M. (2020). Regulatory challenges in AI adoption: Insights from the Bangladeshi banking sector. *Asian Journal of Technology Management, 13*(2), 55-69.

Rahman, M., Akter, M., & Hossain, M. (2019). Infrastructure challenges in AI integration: A study of the banking sector in Bangladesh. *Journal of Information Technology & Politics, 16*(3), 247-259.

Rahman, M., & Akter, S. (2019). Challenges of AI integration in developing countries: Insights from Bangladesh. *Journal of Information Technology & People, 32*(3), 689-705.
Accenture. (2019). *How AI boosts productivity in banking*. Accenture.
Accenture. (2019). *The cost of AI adoption: An industry analysis*. Accenture AI Research.
Bocconi. (2021). *AI and financial regulation in Eastern Europe: A collaborative approach*. Bocconi University Press.
Bughin, J., Seong, J., Manyika, J., Chui, M., & Joshi, R. (2018). *Notes from the AI frontier: Applications and value of deep learning*. McKinsey Global Institute.
Chui, M., Manyika, J., & Miremadi, M. (2016). *Where machines could replace humans—and where they can't (yet)*. McKinsey Global Institute.
Deloitte. (2021). *AI and the banking sector: Trends, challenges, and opportunities*. Deloitte Insights.
Ernst & Young. (2019). *Accelerating AI adoption in Indian and Chinese banking sectors: A comparative study*. EY Report.
European Commission. (2020). *General Data Protection Regulation (GDPR): Key issues and compliance requirements*. European Commission.
Fuster, A., Goldsmith-Pinkham, P., Ramadorai, T., & Walther, A. (2019). Predictably unequal? The effects of machine learning on credit markets. *Journal of Financial Economics, 136*(2), 233-250.
Hossain, M. (2019). Modernizing the banking sector in Bangladesh: The role of AI. *Journal of Banking Technology, 18*(1), 87-105.
IMF. (2020). *AI in African banking: Overcoming barriers through mobile technology*. International Monetary Fund Report.
Lee, K. F., & Triolo, P. (2021). China's AI development: Regional implications and policy challenges. *Journal of AI Policy and Strategy, 3*(1), 47-69.
McKinsey Global Institute. (2018). *AI adoption in financial services: Global perspectives*. McKinsey Report.
McKinsey Global Institute. (2018). *The AI revolution in banking*. McKinsey & Company.
PWC. (2020). *AI in banking: Embracing transformation*. PWC Insights.
World Bank. (2018). *Mobile banking and AI: Lessons from Kenya and Nigeria*. World Bank Report.

Appendix 1: Survey Questionnaire

Section A: Demographic Profile of Survey Respondents

01. What is your age?
    a) 25-34
    b) 35-44
    c) 45-54
    d) 55 and above
02. What is your gender?
    a) Male
    b) Female
    c) Prefer not to say
03. What is your highest level of education?
    a) Bachelor's degree
    b) Master's degree
    c) Doctorate
    d) Other (please specify)
04. How many years of experience do you have in the banking sector?
    a) Less than 5 years
    b) 5-10 years
    c) 11-15 years
    d) 16-20 years
    e) More than 20 years
05. Which type of bank do you work for?
    a) Public
    b) Private
06. What is your current job role?
    a) Entry Level
    b) Mid-Level
    c) Senior Level
    d) Executive
    e) Other (please specify)

Section B: Summary of Identified Barriers

07. To what extent do you agree that lack of technical expertise is a barrier to AI integration in your bank?
    a) Strongly agree
    b) Agree
    c) Neutral
    d) Disagree
    e) Strongly disagree
08. To what extent do you agree that high implementation costs are a barrier to AI integration in your bank?
    a) Strongly agree
    b) Agree
    c) Neutral
    d) Disagree
    e) Strongly disagree
09. To what extent do you agree that regulatory challenges are a barrier to AI integration in your bank?
    a) Strongly agree
    b) Agree
    c) Neutral
    d) Disagree
    e) Strongly disagree

10. To what extent do you agree that resistance to change among employees is a barrier to AI integration in your bank?
    a) Strongly agree
    b) Agree
    c) Neutral
    d) Disagree
    e) Strongly disagree
11. To what extent do you agree that data privacy and security concerns are a barrier to AI integration in your bank?
    a) Strongly agree
    b) Agree
    c) Neutral
    d) Disagree
    e) Strongly disagree

Section C: Distribution of Responses on Lack of Technical Expertise

12. Does your bank provide sufficient training programs on AI technologies?
    a) Yes
    b) No
    c) Not sure
13. Do you believe the current workforce in your bank has the necessary skills to manage AI technologies?
    a) Yes
    b) No
    c) Not sure
14. Would you be interested in participating in AI training programs if offered by your bank?
    a) Yes
    b) No
    c) Not sure

Section D: Distribution of Responses on High Implementation Costs

15. Does your bank have a dedicated budget for AI implementation?
    a) Yes
    b) No
    c) Not sure
16. Do you think the initial cost of AI technology is justified by its potential benefits?
    a) Strongly agree
    b) Agree
    c) Neutral
    d) Disagree
    e) Strongly disagree
17. Would financial incentives (e.g., subsidies, tax breaks) from the government encourage your bank to invest in AI technologies?
    a) Yes
    b) No
    c) Not sure

Section E: Comparison of Barriers by Type of Bank (Public vs. Private)

18. In your opinion, do public sector banks face more regulatory challenges in AI integration compared to private sector banks?
    a) Yes
    b) No
    c) Not sure
19. Do you think private sector banks are more flexible in adopting new technologies compared to public sector banks?
    a) Strongly agree
    b) Agree
    c) Neutral
    d) Disagree
    e) Strongly disagree

Section F: Perceived Impact of AI Barriers on Operational Efficiency

20. How significantly do you believe overcoming AI barriers will improve operational efficiency in your bank?
    a) Very significantly
    b) Significantly
    c) Moderately
    d) Slightly
    e) Not at all

2. **Interview Guide**

01. **Background and Experience:**
    a. Can you briefly describe your role and experience in the banking sector?
    b. How familiar are you with AI technologies and their applications in banking?
02. **Perceptions of AI Integration:**
    a. What are your views on the potential benefits of AI integration in the banking sector?
    b. How ready do you think your bank is for AI adoption?
03. **Barriers to AI Integration:**
    a. What do you perceive as the main technical challenges in integrating AI into your bank's operations?
    b. Can you discuss any financial constraints your bank faces regarding AI implementation?
    c. What regulatory challenges have you encountered or anticipate encountering in AI adoption?
    d. How would you describe the cultural and organizational readiness for AI within your bank?
04. **Strategies for Overcoming Barriers:**
    a. What measures do you think are necessary to address the technical skill gap in your bank?
    b. How can financial constraints be mitigated to facilitate AI adoption?
    c. What changes in the regulatory framework would support AI integration in banking?
    d. What strategies could help in managing resistance to change among employees?
05. **Data Privacy and Security:**

   a. How significant are data privacy and security concerns in your bank's decision to adopt AI technologies?
   b. What steps do you think are necessary to ensure data privacy and security in AI implementations?

06. **Infrastructure and Data Management:**
   a. How adequate is your bank's current infrastructure to support AI technologies?
   b. What improvements are needed in data management practices to facilitate AI adoption?

07. **Customer Trust and Acceptance:**
   a. How do you perceive customer attitudes towards AI-driven services?
   b. What strategies could be employed to build customer trust in AI technologies?

08. **Future Outlook:**
   a. What do you see as the future of AI in the banking sector in Bangladesh?
   b. What are your recommendations for successfully integrating AI in your bank?

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