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THE FINANCIAL TECHNOLOGY, DIGITAL TRANSFORMATION & REGULATORY COMPLIANCE IN BANKING SECTOR: CHALLENGES VS OPPORTUNITIES

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KEYWORDS	ABSTRACT
Financial Technology, Digital Transformation, Regulatory Compliance, Digital Banking, Challenges & Opportunities	This study aims to explore challenges and opportunities for banking sector due to emerging technologies including financial technology (FinTech) and digital transformation of banks by meeting regulatory requirements. Financial technology & digital transformation became essential elements of contemporary banking industry to mitigate the emerging challenges for sustainable prospects in presence of regulatory compliance. It examines the views from relevant stakeholders by compiling their responses about potential challenges and opportunities in the contemporary world of high competition and globalization. Data was collected from bankers, experts and practitioners over focus groups, in-depth semi-structured interviews and structured professional interactions regarding financial technology, digitization and regulatory compliance. Results indicate that every bank is striving to use fintech and digital banking services within the regulatory boundaries specified by SBP. The nomenclature used for digital banking are e-banking, internet banking, mobile banking, online banking, cashless banking, internet / self –service technology & branchless banking. Results could help stakeholders, especially the bank officials and regulators, to take the informed decisions to devise and implement suitable strategies for the future endeavors.
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INTRODUCTION

The financial technology (FinTech) refers to integration of technological equipment into offering financial services to improve the efficiency of services (Senyo, Karanasios, Agbloyor & Choudrie, 2024). FinTech includes different software, mobile apps, and other digital tools that change the traditional service delivery into modern way. Fintech could enhance the performance of financial sector, especially bank that has been evident in last few decades. It is evident that fintech has shown

continuous growth in financial and banking sector in presence of digital transformation ([Gamarra, Teixeira, Longaray, Reis & Merino, 2022](#)). This study aims to explore the fintech, digitization and compliance of regulatory compliance about banking sector by assessing challenges & opportunities for stakeholders. As banks adopt innovative tools like mobile banking platforms, digital payments, artificial intelligence, blockchain and data-driven decision systems, they meet both transformative opportunities and significant regulatory challenges. The fintech could increase the efficiency of the banking institutions and work with the integration of modern tools and software for facilitation of its stakeholders.

Digitalization is transforming the relationship between humans, machines and techno-sphere etc. It is observed that digital transformation became an important element of the banking industry in the contemporary world besides its merits and demerits ([Pang, Jin, Zheng & Tien, 2024](#)). The banks operating in Pakistan have no exception from the challenges of emerging technologies along-with regulatory requirement in the dynamic business world. Financial technology and digitization could reduce human efforts being cost-effective to attain individual & institutional goals. The banks can serve remote populations, streamline loan approvals over automated credit scoring, and leverage data analytics to personalize financial services ([Latiff, Alqudah, Samara & Alslaibi, 2025](#)). Thus, this study explores the role of emerging technologies/digital technologies in performance of banks by documenting the contemporary challenges and opportunities for the banks due to digitalization and financial technology. It also documented the influence of emerging technologies by exploring potential benefits and platforms of financial technology and digitalization of banks in presence of regulatory compliance.

LITERATURE REVIEW

The banking sector has experienced several challenges since its inception and evolved into present structure in different regimes. The Pakistani banking sector faced very turbulent and challenging circumstances since its inception ([Ahmad, Rehman & Saif, 2010](#)). However, emergence of Islamic banking created another challenge for conventional banks ([Ahmad, Humayoun & Hassan, 2010](#)) that became more complex due to difference in perception of shariah scholars and employees of Islamic banks ([Ahmad, Farooq & Imran, 2021](#)). Structure, procedural and operational changes are more evident in pre-Covid-19, during Covid-19 era and post Covid-19 indicating drastic changes in the banking institutions due to direct and indirect intervention of the technology, digitization and globalization. Through these innovations, the financial institutions position themselves to achieve sustained growth, greater customer loyalty, and long-term strategic value. Thus, operational and functional areas require more technology-oriented products, prompt services and quick response to meet requirements/needs of various stakeholders for provision of standardized products as well as customized products.

Financial literacy enables us to learn and understand the fundamentals of financial management ([Lusardi, 2019](#)) and it focuses on ability regarding financial judgement ([Beal & Delpachitra, 2003](#)). Financial products in the recent age are directly linked with the fintech and digital transformation to enhance financial literacy and better decision making among individual and corporate entities ([Vissing-Jorgensen, 2003](#); [Guiso & Jappelli, 2005](#); [Nkundaban Kasozi, Nalukenge & Tauringana,](#)

2014). Therefore, digitization and fintech could be associated with performance of business (Lusardi & Mitchell, 2014). Using technological tools and solutions to replace, alter, and disrupt traditional financial processes and systems is a crucial component of this industry (Pushmann, 2017). Fintech businesses provide services to the banking, payments, lending, investing, insurance, and wealth management sectors of the financial industry by employing the revolutionary technologies like artificial intelligence, machine learning, big data analytics, blockchain, and mobile applications (Vives, 2017).

The effectiveness and efficiency of innovative tools could be assessed by comparing their cost and benefits for sustainability (Hsiao & Tsai 2018). The association is documented between financial literacy and financial technology (Morgan, Huang & Trinh, 2019; Junger & Mietzner, 2020). The technological development has significant role in the financial sector, especially in banking sector due to competition and market saturation. In this connection, it is observed that different financial institutions have begun offering a wide range of services using Fintech worldwide (Nangin, Barus, & Wahyoedi, 2020). The today's world is linked with the innovative and modern tools to get more effective and efficient operations and procedures to manage emerging demands of the stakeholders (Dorfleitner, Hornuf Schmitt & Weber, 2017; Ratecka, 2020). Therefore, striking a balance between the innovation and regulation becomes increasingly challenging as financial products grow more sophisticated and cross-border transactions more frequent. Consequently, the scope of fintech and digital transformation is unlimited in terms of the new and innovative financial products for better utilization of resources (Hurley & Adebayo 2016; Vives, 2017; Königstorfer & Thalmann, 2020; Bouteska, 2024).

RESEARCH METHODOLOGY

This study explored the role and interventions of financial technology, digitization and regulatory framework in performance of banks. Data was collected from bankers, customers and practitioners /experts by approaching in person. Moreover, several focus groups were conducted to compile responses/feedback from the respondents. In additions 11 in-depth interviews were also conducted to collect primary data from the stakeholders. Similarly, several structured professional interactions were undertaken to compile views of experts, bankers and relevant stakeholders/professionals in the selected part of the Punjab, the most populous province of Pakistan. Sample was selected based on purposive sampling technique by approaching the target audience to compile their views in a conducive and enabling environment. The inclusion and exclusion criteria were well established prior to selecting target respondents for compiling profile and sufficiency of the desired knowledge, exposure as well as experience related towards fintech and digital transformation/technology in the banking sector.

RESULTS & DISCUSSION

Results indicate that every bank is striving to use fintech and digital banking servicing within the regulatory boundaries specified by the regulator. It is observed that automation/digitization of all traditional banking products, activities and service delivery channels are linked with technology-oriented services to facilitate its stakeholders. It could reduce human interaction amid customers and bank by eliminating time and place barriers. Banks are performing well due to benefits of

digital banking that are accessed and delivered through digital channels. It includes payments, credit, savings, remittances, insurance and financial information. The term “digital channels” refers to the internet, mobile phones (both smart phones & digital featured phones), ATMs, POS Terminals, NFC-enabled services, chips, electronically enabled cards, biometric devices, phablets and any other digital system. Similarly, Fintech is attracting attention of banks as it enables them for safe delivery of financial services to public through innovative technologies like mobile phone enables solutions, electronic money models and digital payment platforms. The nomenclature used for the digital banking are:

- ✓ E-banking & Internet Banking
- ✓ Mobile Banking & Online Banking
- ✓ Cash Less Banking, ATM & Branchless Banking
- ✓ Automation / Internet / Self –service technology

Fintech and digitization created challenges and opportunities for the banks that are evident from feedback/response from relevant stakeholders. The adoption of various digital channels enables banks to boost their customer reach, which is reflected in their performance. State Bank of Pakistan stimulates the banks to inculcate fintech, digital platforms and regulatory framework by using internet/technology instead of traditional/physical products & services. It could help to interact with customers through internet & mobile channels by allowing customers to perform all financial transactions online via websites or mobile apps i.e., virtual / digital branch environment; social media interactions; innovative payment solutions and mobile technology. It has now become vital delivery channel allowing banks to offer traditional banking services, i.e., funds transfer to and from one or multiple accounts, several types of bills and card payments and get other varied information about their accounts.

Through internet banking access, customers have comfort to do banking transaction from anywhere in world like from their house, office/from any place around the globe by connecting over internet services. Internet banking enables bank customers to get access to financial & non-financial services 24/7 (24 hours day through the week). It saves their time as compared to over-the-counter banking & continues round-the-clock banking services for their clients that could improve banks' financial performance. Banks are aggressively advertising their internet banking services to the consumers to reinforce them in terms of their values, beliefs, and experiences for adoption. Internet banking works in two ways; firstly, existing banks besides physical branches offer their products and services through their website and other electronic channels and secondly, bank works as virtual banks and offer their services over internet and branchless channels. There are three levels of internet banking offered by banks:

1. The basic level services where websites of the bank only disseminate information of different products and services being offered to the customers/ public in general and reply to customer queries.
2. The next level web services allow customers to perform non-fund-based transactions online like viewing account statement, submitting instruction to banks, but do not allow fund-based transactions in their accounts.

3. The third internet banking, customers are fully allowed to perform fund-based transactions by operating accounts for transfer of funds, payment of different bills, availing other online products of banks etc. Most of banks in Pakistan are providing online / internet banking with transactional capabilities.

Mobile banking is like internet banking as it provides fast mode of performing frequent banking transactions. The unique feature of mobile banking is that it enables “anywhere anytime banking” as one of the most convenient and easy way to stay connected to bank. These services have recently broadened with array of options like banking transaction details, viewing of account balance, mini statement, self-transfers, third party transfer of funds, utility bill payments, ticket booking features etc. that led to a surge in Mobile banking transactions all of which can strain traditional banking structures in order to grow more sophisticated and cross-border transactions more frequent. Thus, the mobile devices may include mobile phones, PDAs, wireless tablets, and any other device that connects to mobile telecommunication diverse networks as well as makes it possible to execute the banking transactions.

In Pakistan, many financial institutions are offering mobile banking services to their customers by opening their registered accounts for mobile banking services (through SMS, USSD & Mobile banking application). Customers can perform banking transactions within area that is being covered by mobile telecommunication. Mobile banking has great potential for executing financial transactions, which enhances financial expansion with reduced cost and ease. Branchless banking is a delivery of banking services outside the bank branches towards the customers through engaging third-party intermediaries likewise merchants and cellular companies, as the primary point of contact with the customers that can become a source of long-term opportunity when approached strategically. Thus, it relies upon the technologies such as point-of-sale terminals as well as mobile phones to execute financial transactions.

Digital Delivery Channels

A website is a digital channel which allows banks to interact with their customers and public at large regarding their financial products/services and other important information about banks like branch network, application & forms, bank charges etc. Bank's Website is a source of disseminating information by providing facility to perform transactions and other allied operations. The website provides 24/7 access to customers to get information about banks or perform financial transactions from anywhere at any time, quicker & with lower cost as compared to avail services from traditional bank branches.

Automated Teller Machine (ATM)

ATM is used electronic mode of financial transactions in Pakistan, and its network is available interoperable 24 hours a day – 365 days a year. Automated Teller Machine (ATM) allows account holders of banks to access their accounts in a secured method for withdrawal of cash, checking their account balances, getting mini account statements, transfer of funds from one account to another & payment of utility bills without intervention of human teller or cashier. ATM provides such service round the clock.

Point of Sale (POS)

POS are digital devices, have been much expended in Pakistan. It is used for processing of financial transactions made over plastic cards like Debit cards, Credit cards and ATM Cards etc. It is reported that POS network processes, route, clear, and settlement of ATMs as well as online POS debit card transaction to link banks (card issuer), merchant card acquirers, customers/users and third-party service providers through telecommunication gateways to test new technologies while upholding consumer protection.

Mobile Applications

Mobile applications are important platforms used by the banking sector in the recent age. In the current era of ICT, smart phones are capable enough to run all internet applications. Banks are now adopting digital applications operated over smart phones to access their network for conducting financial transactions to build greater resilience and trust among customers and stakeholders. This digital channel is blend of mobile cum internet banking i.e., internet banking over digital apps by using smart phones.

CONCLUSION

The journey towards digital banking from traditional banking is not an easy task in developing and emerging economies like Pakistan. It requires complete transformation of financial services from conventional to tech-oriented by addressing the emerging challenges for the stakeholders. Banks are required to implement the core banking solutions including multichannel customer experience platforms, advance analytics for marketing and customer relationship management and expose them to Appstore. Banks moving towards Digital World Banking System must undertake intensive modifications and upgradations of their business culture on IT. In this linking, the digital banks are required to implement the innovation at their core and use data to increase their revenues, create better customer engagement and solutions for new business to be implemented. Digital banking revolution is not limited to Retail Banking rather all banking system needs to be benefited from the new digital age. While facing the new digital age and dealing successfully and effectively with the digitalization, banking system needs to follow four identified digital strategies to gain market share and control costs.

- ✓ Introduce their own digital brands which are separate from their existing brands. It allows the banks to make separate identity of their digital product and services from existing offerings. By doing that, banks can provide different experiences and price structures for users of their digital products.
- ✓ Modernize digital experience, so, it looks like other digital experiences the bank's customers are having. Add new digital skills that go beyond Internet and mobile banking to deliver new digital assets. To compete in digital world, introduce set of digital courses by eliminating paper-based processes.

Challenges & Opportunities

Digital Banks operates in Cyber World and are highly exposed to cybercrimes. The hackers and fraudsters constantly watch the loopholes in the system to take advantage of that. They are stealing

customer information and misuse it for their own interest by giving customer financial loss and bank with reputation loss. To tackle cybercrimes, banks should rally their security measures on regular basis and keep their customers updated to adopt safety measures while executing their banking transactions online.

Technology Upgradation & Quality Services

Technology is changing rapidly, and new features are constantly introduced in the digital devices. Banks, to remain competitive and secure, require incorporating such changes in their systems and delivery channels. Technical errors may disrupt the quality of service being provided both in terms of its use and time taken to complete the transaction in diverse circumstances. In this connection, maintaining Bug free applications as well as speed for data transfer is a big challenge for the digital banks to deal with.

Managing Risk & Regulatory Requirements

To meet risk management obligations, the digital banks must take proactive measures to combat terrorist financing, financial frauds, and money laundering. They should also comply with the regulatory requirements of Central Bank. Another big challenge for the Digital Banks is Financial Technology (Fintech). The fintech questions the banking business models by launching their own innovative business models and becoming competitors of Digital Banks. FinTech is not supervised and regulated as banks are, but they compete with same devices, mechanisms, and principles but in a different way. Therefore, they offer similar payment solutions as banks provide so fetching their share from banks.

Creating Awareness, Trust & Ease of Use

Banks should create awareness about Fintech and digital transformation regarding their products through media campaigns, advertisements, demos etc. on mass level. It could help their customers to get informed about the new digital channels to perform banking transactions. It may create interest among customers in trying new ways of banking. Developing trust to perform banking transactions through digital channels in customers is another challenging job for banks. Gaining trust for using new digital products with the security and privacy is very important for successful application of Fintech and digital transformation. The level of usefulness and ease of use are important factors to influence the consumer's intention to adopt FinTech and digitization. In this connection, the bank's management should primarily focus on the development of useful systems at ease of their usage by every customer.

Cost of Services

Customers find Digital Banking more affordable if it costs them cheaper than branch banking. It should introduce creative promotional and pricing strategies to attract more price-conscious customers. Today's banking is a complex business that delivers their products and services through multiple channels as per requirements of their customers. With the massive technological adoption at customers' end, digital banks have an opportunity to offer better financial products at lower cost any time anywhere. By grabbing benefits of digitization, banks are now in better position to expand their network to unbanked areas without spending heavily on infrastructure in terms of branch

banking & spending to strengthen their IT infrastructure for providing continuous digital services to their online customers.

Fintech and digitization of banking bring banking services in orbit of those people who otherwise could not afford branch banking because of their access to branches and affordability both in terms of cost and time. It is taking over the branch banking due to convenience they have for customers, and it is customer preference which will drive business models in future. Banks all around the world are becoming increasingly digital and this is the need of the day. Therefore, customers, competitors, regulatory agencies and especially Government push banking sector in the direction where they meet the promise of “anytime, anywhere banking”. Thus, an effective and efficient mitigation of the challenges could create the opportunities for the banking sector in addition to other sectors and segments of society.

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