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Determinants of Systemic Risks of NBFCs

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8.1. Introduction

Mythology, folklore and literature are replete with stories of fatal weaknesses in important characters which not only led to their downfall, but also the collapse of regimes and empires. The hubris of Duryodhana and Ravana, the ambition of Macbeth or the rash temper of Sonny Corleone – all their flaws were exploited by rivals. However, there are also other tragedies which are beyond the control of the protagonists – like the legend of Oedipus Rex. In a similar vein, it is important to categorize the determinants of systemic risks posed by banks and financial institutions. There is a need to distinguish between crises that are driven by bank-specific factors and those in which the financial sector becomes collateral damage. When the causes differ, so will the remedies.

The study of systemic risk has gained currency among academicians and policymakers, around the world. Based on such research, Domestic Systemically Important Banks (D-SIBs) and Global Systemically Important (G-SIBs) have been ascertained. Under Basel III, these institutions are levied a higher capital surcharge because they are *Too Big to Fail* (TBTF). Their backward and forward linkages with the economy are strong enough to generate large spillover effects, if they collapse. However, though the RBI has classified a few NBFCs in the Upper Layer, under recent scale-based regulation, the factors which aggravate the systemic risk of NBFCs have not been explored.

In this chapter, we make three contributions. First, we focus on those institution-specific factors that drive systemic risk contributions of large NBFCs in India. Though there are many studies, across the world, on the determinants of systemic risk for banks (e.g. Duan et.al. 2021, Qin and Zhou 2021), there is no such examination of NBFCs. To the best of our knowledge, this is the first study on determinants of Systemic Risk of Indian NBFCs. Secondly, we try to examine how the drivers of systemic risk differ before and after the onset of the pandemic. In particular, we observe that NBFC-specific factors become irrelevant, in the wake of the Covid-19 crisis. Thirdly, we illustrate how the Atmanirbhar Bharat Scheme, introduced in May 2020, became the most important tool to calm down NBFC market volatility and restore positive returns. This is counterintuitive because the assistance to NBFCs was a small component of the scheme. Perhaps, the large positive externalities, which the scheme offered, gave a bigger boost to the NBFC sector.

These results are important for researchers, bankers and policymakers. Academicians can build on this work to identify more factors which worsen systemic risk for NBFCs. Bankers can monitor such drivers, to regulate the flow of loans and advances to vulnerable NBFCs. Policymakers can frame new risk management guidelines for NBFCs, based on these early warning signals. As we discuss later, our chapter has important lessons for fixation of criteria for capital requirements of systemically important NBFCs and banks, introduction of

Countercyclical Capital Buffer for NBFCs and conduct of stress tests.

The chapter is structured as follows. In Section 8.2, we present a brief literature review, to highlight the main issues. Section 8.3 discusses the data and the methodology. In Section 8.4, we summarize and interpret the descriptive statistics. Section 8.5 focuses on our econometric analysis. Section 8.6 concludes, with a few suggestions on policy implications and scope of future research.

8.2. Literature Review

The focus of systemic risk analysis is on the contribution of a particular bank or FI, when the financial sector has failed. It has often been blamed on the size of the institution, because bigger financial firms can generate larger macroeconomic shocks, when they collapse. The typical example would be the bankruptcy of Fannie Mae and Freddie Mac in 2008. Acharya et. al. (2011) show how these institutions misused government guarantees to expand fast, based on high leverage, with short-term domestic and foreign debt. Given their interconnectedness with the US banking sector and foreign lenders, they became Too Big To Fail (TBTF) organizations.

Several Value at Risk (VaR)-based models have often been employed to measure Systemic Risk. A popular method is Marginal Expected Shortfall (MES). It is defined as *the expected loss on a bank's equity conditional on the occurrence of a large loss in the aggregated returns of the system* (Acharya et. al. 2017). In other words, when the financial system is in the Expected Shortfall zone (i.e. beyond VaR), how does a particular firm perform? What is its contribution to the systemic ES? Since MES is a ratio, it is independent of bank size. Contrary to popular criticism, this feature may be a boon because the MES measure is also able to identify the systemic vulnerability of smaller banks and FIs. If such high-risk organizations are allowed to grow unbridled, they may pose a threat to the financial sector in future, when they are large enough. The Component Expected Shortfall (CES) measure multiplies the MES of an FI with its weight (as captured by market capitalization) in the financial sector (Banulescu et. al. 2015). It captures the stylized fact that larger firms pose greater systemic threat. Brownlees and Engle (2017) also extend MES, by including firm size and leverage and calling the new tool SRISK. This model can be used to estimate Capital Shortfall of a firm, contingent on Systemic Risk (Acharya et. al. 2012).

There is a veritable explosion of Systemic Risk models, in the recent literature. However, we choose MES, for a few reasons. First, it is easy to measure – it captures individual firm performance during the x% worst days for the market. Secondly, it is comparable across banks and FIs, both at a point and over time. Thirdly, it does not contain any firm-specific factors (size, leverage or profitability), which allows us to examine how such idiosyncratic elements may affect its systemic risk contribution. Otherwise, an endogeneity problem may arise if both dependent and explanatory variables include firm-specific factors. Finally, we can always use more sophisticated systemic risk methods, for robustness checks.

We employ the MES-based approach to assess the systemic risk contributions of individual NBFCs. These institutions have become crucial to the Indian financial system, over time. Analysis of RBI data suggests that, in 2016-17 and 2017-18 (i.e. the peak of the NPA crisis), the share of NBFC and HFCs, in institutional credit (net of bank loans to these firms), was as high as 40%. Bank credit to NBFCs grew at an average rate of 17% per annum, as against its overall growth rate of 8.5%, during this period (Sengupta et. al. 2021). Therefore, NBFCs sustained both the demand and supply of credit during a period when the growth of bank loans was muted.

The significance of the ILFS crisis and the impact of the Covid-19 pandemic must be understood, in this context. The ILFS default, in September 2018, reduced rollover rates of CPs issued by NBFCs from 95% to 10%. The spreads on such CPs (over 91 DTB) rose above 150 bps. The spreads on 3-year AA paper issued by NBFCs increased to more than 200 bps. There was also a run on mutual funds which were exposed to NBFCs (Sengupta et. al. 2021).

Likewise, the CP spreads spiked to 250 bps and the AA-spreads to around 350 bps around April 2020 (Jayakumar et. al. 2021), in the wake of the Covid-19 crisis. As a result of the successive shocks, the share of NBFC and HFC Credit, to total loans, has fallen to around 6% in 2021-22. In response, the Reserve Bank of India has introduced a number of important guidelines, e.g. on Liquidity Standards in November 2019 or Scale-Based Regulations (SBR) in October 2021, to safeguard the financial stability and solvency of the NBFC sector in India. It has also released the list of 16 NBFCs, which belong to the Upper Layer of SBR, in September 2022. These NBFCs will be scored on a number of parameters like size, leverage, complexity, funding patterns and interconnectedness (RBI 2022). There is a need to assess the impact of these and other variables, on the systemic risk contribution of NBFCs.

However, much of the research has been focused on the performance of NBFCs during good and bad phases. The Report on Trend and Progress of Banking in India, published every year by RBI, discusses balance sheet growth and composition, profitability and solvency, of NBFCs and HFCs, over time. Jayakumar et. al. (2021) and Chandra et. al. (2022) study the recent performance of NBFCs, with special reference to the pandemic. Neelima et. al. (2021) examine the impact of schemes like TLTRO (Targeted Long-Term Repo Operations) on the liquidity positions of NBFCs, during the Covid-19 Crisis. On the other hand, the semiannual Financial Stability Report of the RBI performs stress tests on NBFCs and analyzes their interconnectedness, with the rest of the financial sector. But, there is no reference to the factors that affect their systemic risk.

Against this backdrop, the chapter wishes to identify and explore those variables which drive systemic risk contribution of NBFCs, before and during the Covid-19 crisis. As a corollary, it also attempts to understand the impact of the flagship GOI Atmanirbhar Bharat Scheme, on the performance of the NBFC sector, during the pandemic. Thirdly, we try to show how protracted and severe the effect of the pandemic was, relative to the ILFS and DHFL episodes.

8.3. Data and Methodology

The analysis of the chapter is based primarily on stock market data. We choose an NBFC index and identify the dates on which it falls below the VaR threshold (i.e. in the ES zone), for six years between 2016-17 and 2021-22. In each year, there are three VaR violations (250 days, 99% VaR). We estimate the average performance of every NBFC stock in the sample, on these three days, per year. This is the MES of the NBFC, which captures its contribution to systemic ES during that financial year. We regress the MES on a set of firm–specific factors and macro variables, to identify the determinants of systemic risk contribution for NBFCs.

We choose the NIFTY Financial Services Ex-Bank (NIFTY_FSEB) index, which tracks the performance of major firms in the financial services industry, apart from banks. It includes the shares of thirty large NBFCs and insurance companies in India. Then, we create a sample of ten NBFCs. This list is based on the group of sixteen NBFCs that RBI has included in the Upper Layer, for Scale-Based Regulation (RBI 2022). The sample is truncated to ten because the shares of some NBFCs, in the RBI list, are not traded on NSE. Or, balance sheet data on some others is not available, on a continuous basis, between 2016-17 and 2021-22. We are left with six years of stock price and balance sheet data on the following firms:

Aditya Birla Capital, Bajaj Finance, Cholamandalam Investment and Finance, HDFC, IndiaBulls Housing Finance, L&T Finance Holdings, LIC Housing Finance, Mahindra and Mahindra Finance, Muthoot Finance and PNB Housing Finance.

The stock price data is taken from the NSE website and the balance sheet data from Ace Equity database.

We start with 250 daily NIFTY_FSEB index values, for each year between 2016-17 and 2021-22. We compute logarithmic returns and mark off the 99% worst historical loss, as the threshold below which 1% of the worst negative shocks occur. This is 99% daily VaR (in percentage terms) which is assumed to be repeated in future. The average of the adverse shocks, beyond VaR, constitutes the 99% daily

Expected Shortfall (ES) for the index. Since historical scenarios are assumed to recur, this method is known as Simple Historical Simulation (HS). We also note the dates on which 99% VaR is violated for the index.

For each NBFC, we also generate historical returns, from stock prices. As before, the data is extracted from the NSE website. We calculate the mean of the NBFC returns, on those days when the NIFTY_FSEB index return is below 99% VaR. This average return, conditional on systemic tail loss, is its Marginal Expected Shortfall (MES). It captures the contribution of an NBFC to systemic turbulence, during a year. We proceed to investigate the factors which affect the systemic risks of NBFCs in our sample.

We choose the following solvency and stability ratios as the potential explanatory variables:

1. Equity/Assets: This is similar to the Basel III Leverage Ratio for banks. The higher the share of assets funded by equity, the greater the solvency of the NBFC. It can absorb more losses on the asset side with Core Equity Tier I Capital. Since equity is a perpetual source of funds, it can also finance more long-term assets without the threat of liquidity risk. It is expected that a higher Equity /Asset Ratio should lower the systemic risk contribution of NBFCs (Laeven et.al. 2016). We denote this variable as LR – Leverage Ratio.
2. Asset Size: A larger NBFC may be more interconnected and TBTF. Hence, as asset size increases, the systemic contribution of an NBFC should also rise. We take the natural logarithm of asset volume for each NBFC (Laeven et.al. 2016). The variable is denoted as LnA.
3. Cumulative Gap/Cumulative Outflows: This ratio shows how large total expected inflows are, relative to total outflows, over a horizon. We choose a one-month time band, for which the Liquidity Coverage Ratio has been defined by Basel III and stringent limits prescribed by RBI. We represent this variable as CGapR – Cumulative Gap Ratio. The bigger is CGapR, the higher the amount of liquid assets, to repay volatile liabilities. A rise In CGapR should reduce the systemic risk contribution of an NBFC (IMF 2023).
4. Long-Term Borrowing Ratio: This captures the fraction of long-term deposits and borrowing, to total liabilities. This is in the spirit of the Net Stable Funding Ratio under Basel III. A rise in the Long-Term Borrowing Ratio is expected to reduce liquidity pressure and systemic risk contribution of an NBFC. It is indicated as LTBR.
5. Gross Value Added (at constant prices): Growth in GVA or GDP should reduce systemic risk of NBFCs.
6. CP Rate: The most important money market instrument issued by NBFCs, A rise in the CP rate should increase the cost of funds and heighten systemic risk contribution.

The regression equation is as follows:

$$MES_{it}=\beta_0+\beta_1 LR_{it}+\beta_2 CGapR_{it}+\beta_3 LTBR_{it}+\beta_4 LnA_{it}+\beta_5 LnGVA_t+\beta_6 CP_t+u_{it}$$

Equation 8.1

In equation 8.1, the subscript i stands for an NBFC and t stands for the year. The dependent variable is Marginal Expected Shortfall (MES). The error term is represented by u_{it}.

We split the sample into two phases – pre-Covid (2016-17 to 2018-19) and during Covid (2019-20 to 2021-22). Each set has 30 observations. Given the limited number of observations, we do not use more independent variables, to avoid the loss of degrees of freedom.

8.4. Descriptive Statistics

Table 8.1 presents the dates on which the NIFTY_FSEB index delivered below-VaR performance, in each year.

The long shadow of the pandemic is evident from the data. The ES zones in 2019-20 and 2020-21, between March and May 2020, correspond to the first wave. The relevant dates in 2021-22 belong to the second and the third waves. Covid-19 has ravaged three years of

TABLE 8.1
Dates for NIFTY_FSEB ES Computation

2016-17	*2017-18*	*2018-19*	*2019-20*	*2020-21*	*2021-22*
09-11-16	10-08-17	24-09-18	12-03-20	24-04-20	12-04-21
11-11-16	25-10-17	05-10-18	18-03-20	04-05-20	24-02-22
15-11-16	02-02-18	17-10-18	23-03-20	18-05-20	07-03-22

Source: Author's calculation.

stock market performance, for the financial services sector. The severity of the crisis may be gauged from Table 8.2.

TABLE 8.2
Summary of NIFTY_FSEB Performance

	Worst	*99% ES*	*99% VaR*
2016-17	-5.26%	-4.70%	-3.82%
2017-18	-3.97%	-3.19%	-2.61%
2018-19	-5.13%	-4.68%	-4.27%
2019-20	-19.58%	-12.63%	-8.50%
2020-21	-7.70%	-6.71%	-5.36%
2021-22	-5.59%	-5.18%	-4.41%

Source: Author's calculation.

It is clear that losses spike with the onset of the pandemic, in late 2019-20. The decline in the index is much sharper and more prolonged than the crash in 2018-19, the year in which ILFS and DHFL collapsed.

A glance at the NBFC data also conveys the same message. Table 8.3 presents the average annual MES, across all NBFCs, along with the mean values of the select balance sheet solvency and stability indicators explained earlier.

The spike in the MES, from 2019-20, is obvious. The leverage ratio has also increased from the same year. This jump in capital adequacy may be due to the propensity of NBFCs to slow down on loans and hold safe assets – cash and government bonds - during the pandemic. Jayakumar et. al. (2021) present evidence in support of such flight to quality, by NBFCs, during the Covid phase. It is also noticeable that, on an average, the one-month liquidity surplus (CGapR) is substantial. Large NBFCs (on an average) seem to appreciate the need for prudent liquidity risk management, in the absence of deposit insurance and lender-of-last-resort facilities.

It is now time to discuss the impact of the AtmaNirbhar Bharat scheme, on NBFC stock prices. On the 12th of May 2020, the Prime Minister announced a comprehensive (Rs. 20 lakh Cr.) package, aimed to restore economic activity and output. The direct support to

TABLE 8.3
Mean indicators across NBFCs

	MES	*LR*	*CGapR*	*LTBR*	*LnA*
2017	5.09%	24.15%	215.82%	62.87%	10.96
2018	3.94%	27.80%	294.35%	62.86%	11.19
2019	5.72%	28.37%	167.63%	63.21%	11.38
2020	13.11%	28.23%	173.12%	65.26%	11.44
2021	8.52%	30.56%	395.69%	64.35%	11.49
2022	6.59%	33.20%	110.50%	62.99%	11.56

Source: Author's calculation.

NBFCs, through liquidity support arrangements like the Partial Credit Guarantee Scheme (in which banks buy pooled loans and bonds of NBFCs, which are guaranteed in part by GOI), was a small fraction of the package. Table 8.4 compares the average performance of NBFCs, for three months before and after the initiation of the AtmaNirbhar Bharat project. The results are given below:

TABLE 8.4

Atmanirbhar Bharat – Comparative NBFC Stock Performance

	Mean	SD
20.2.20 - 19.5.20	-1.28%	6.33%
20.5.20 - 19.8.20	0.55%	3.59%

Source: Author's calculation.

The difference is remarkable. Even before the scheme had taken off in earnest, the expectation that it might kickstart the macroeconomy, in future, triggered a sharp upswing in NBFC stock market performance. The average return has improved and volatility has reduced. This result is in contrast with the continuous decline in NBFC stocks, till mid-May 2020, despite the announcement of Targeted Long-Term Repo Operations (TLTRO) in March and April 2020. Neelima et.al. (2021) show that the disbursement of Rs. 61586 Cr. to NBFCs, in these two phases, did improve their short-term liquidity positions. But, unlike the instant market response to the AtmaNirbhar scheme, the benefit from TLTRO was not reflected in immediate stock price appreciation for NBFCs.

This proposition has serious implications. Since the Covid crisis was triggered by a collapse of the real sector, NBFC problems may be better solved by schemes that provide a fillip to income and output growth. The resumption of normalcy, through large-scale government expenditure, may attenuate NBFC risks more than liquidity support operations. While such initiatives by GOI and RBI are necessary to keep the NBFCs afloat during the pandemic, their risk profiles will improve only if the economy functions better. We shall return to this point, in the next section.

8.5. Econometric Analysis

We begin with the pre-Covid period

FY 2016-17 – FY 2018-19

The results of the regression model may now be presented, in Table 8.5, and analyzed.

TABLE 8.5

Results of MES Regression Analysis, 2016-17 to 2018-19

	Coefficients	*Values*	*P-value*
LTBR	β_3	0.0566	0.02
LnA	β_4	-0.0138	0.01
LnGVA	β_5	0.0252	0.00
CP rate	β_6	-2.4782	0.01
R^2 = 0.94, F-value significant The intercept is statistically insignificant.			

Source: Author's calculation.

The regression shows a good fit and most variables are also statistically significant. *Only the leverage ratio (LR) and the cumulative gap ratio (CGapR) turn out to be insignificant*. The most plausible reason for their insignificance is that, on an average, they are much more than threshold values. From such high levels, a marginal decline in equity capital or liquidity surplus may not affect systemic risk contribution much.

LTBR exhibits a positive relationship with MES. The most probable logic is that, under normal market conditions (i.e. with positively sloped yield curves), long-term borrowing should be more expensive for NBFCs. Hence, an increase in the share of long-term liabilities would increase their cost of funds and systemic risk contributions.

LnA shows a negative relationship with MES. Bigger NBFCs may enjoy higher economies of scope and scale in business operations, which lowers their systemic risk contribution, in good times.

LnGVA depicts a positive relationship with MES. This result is counterintuitive and deserves further scrutiny. Growth in Gross Value Added or GDP may encourage lending booms by NBFCs, which worsen their systemic

risk contributions. An upswing in business cycle may be outstripped by financial sector growth. This is the familiar rationale for the imposition of a macroprudential Counter Cyclical Capital Buffer, under Basel III. Let us recall that, between 2013-14 and 2017-18, NBFC and HFC credit registered a CAGR of 40%, before the collapse induced by the ILFS default in 2018-19.

CP rate portrays a strong negative relationship with MES. Prima facie, this appears to be a strange one. However, it may be possible if there is a substitution effect at work. In other words, a rise in the CP rate may nudge NBFCs away from the volatile money market instrument to safer and more stable bank borrowings. The growth in bank credit to NBFCs, at the expense of the CP market, should reduce systemic risk contributions. The switch is captured by NBFC balance sheet data, during this period, as well.

It is evident from Table 8.6 that, after an initial spurt in CP issuance, NBFCs relied more on borrowed funds from banks. This trend was reinforced after the ILFS default in September 2018.

In sum, before the occurrence of the pandemic, a set of firm-specific factors, money market rates and GDP growth were the main determinants of systemic risk contribution from NBFCs.

FY 2019-20 – FY 2021-22

We run the regression of MES on all the potential explanatory variables discussed above[1]. However, none of the factors are found to be statistically significant (results not reported). Hence, we develop a brand new model, to explain fluctuations in the MES, during the pandemic. It is presented below, in equation 8.2.

$$MES_{it}=\beta_0+\beta_1 LnCovid_t+\beta_2 FDR_t+u_{it}$$

Equation 8.2

'Covid' stands for the number of active Covid Cases in India, as on March 31 of a particular Financial Year. The data is obtained from WHO. 'FDR' stands for the Gross Fiscal Deficit-GDP ratio, as on the same date. The data is obtained from RBI.

1. The results are available on request.

TABLE 8.6

Trends in Bank Borrowing and CP Issuance by NBFCs (Rs. Billion)

	2015-16	*2016-17*	*2017-18*	*2018-19*
BB	3376	3141	4189	6070
BB growth		-6.96%	33.37%	44.90%
CP	852	1291	1477	1545
CP growth		51.53%	14.41%	4.60%

Source: Report on Trend and Progress of Banking in India, RBI, various issues.

TABLE 8.7

Results of MES Regression Analysis During the Pandemic

	Coefficients	*Values*	*P-value*
Intercept	β0	0.1236	0.00
LnCovid	β1	0.0176	0.00
FDR	β2	-2.0133	0.00
R^2 = 0.51, F-value significant			

Source: Author's calculation.

The results may now be shared and discussed, in Table 8.7.

Both the explanatory variables are statistically significant. However, none of them are NBFC-specific.

LnCovid depicts a positive relationship with NBFC MES. An increase in the number of active Covid cases gives a more severe shock to the real sector. Hence, NBFC sector activity and performance also worsens. This is captured by a rise in MES.

FDR has a strong negative relationship with MES. An increase in the fiscal deficit (relative to GDP) during the pandemic implies higher government expenditure, despite muted tax revenue, to revive a sick economy. The NBFC sector also benefits from such a future spike in economic activity, with greater public expenditure. This is reflected in a decline in MES.

The upshot is that, during a real sector meltdown, financial variables (both bank-specific and market-related like CP) may not be able to influence NBFC stock prices. Stock markets may become active only after economic growth recovers. Hence, financial sector stimuli may be less effective than a big push to the real sector. These schemes are necessary but not suf-

ficient. This is the most important lesson that we learned from the success of the AtmaNirbhar Bharat scheme, vis-à-vis initiatives like the TLTRO, during the early days of the pandemic. We glean the same insights from the MES regressions which span the entire Covid crisis period.

8.6. Concluding Observations

This chapter attempts to investigate the drivers of systemic risk of NBFCs, before and during the Covid-19 pandemic. It finds that fluctuations in financial sector variables like asset size, ratio of long-term liabilities and CP rates are better able to predict NBFC systemic risk during normal periods (which include mild tremors like ILFS and DHFL default). However, during the severe and protracted pandemic, systemic risks are driven only by real sector variables like the Covid count and the size of the fiscal deficit. Hence, there is a felt need to differentiate between the roots of systemic crises, before solutions are prescribed.

This chapter has several policy implications. These are:

Size: The asset size of a systemically important NBFC alone should not increase its capital charges. It need not always have moral hazard incentives because it is too big. This chapter shows that larger NBFCs carry lower systemic risk. Further, the descriptive statistics portray that, on an average, the bigger NBFCs (which constitute our sample) have high leverage and liquidity surplus ratios. They seem to be responsible enough, to protect their reputation and franchise values. Therefore, the composite score that RBI has proposed to identify NBFC-Upper layer firms (RBI 2022) may also be used to fix their capital charges. The methodology considers factors like size, leverage, type of liabilities, complexity and interconnectedness. When all the parameters are combined, the capital charge of a large NBFC may be lower, to reflect its good traits.

Countercyclical Capital Buffer (CCCB): The regression model, for the first phase, depicts a positive relationship between MES and GDP growth. This is indicative of a lending boom, during the upswing state. As NBFC regulations are aligned to those of banks, the RBI must consider imposition of CCCB on NBFCs as well. This may bring errant NBFCs, which may be smaller, back to prudent loan disbursement. Of course, given the importance of NBFC credit to the large unbanked segment, the threshold for initiation of such a strategy must be high enough.

Stress Tests: Our study shows that there may be a fundamental difference between normal and stress episodes. Often banks generate stress shocks, at a higher confidence level, but from the same data sample that is used to design benign scenarios. Such an approach is not correct – the two distributions may be different from each other because the causal factors are not the same. Therefore, stress scenarios should be created from hypothetical and historical stress events. This is the essence of the fabled 'black swan' as well – rare and unprecedented events which may not have occurred in the past but could happen in the future.

There are several avenues for further research. These are:

We may employ other Systemic Risk measures like SRisk and CES, to check whether our conclusions are robust. Our regression model may also be more sophisticated. We may add other explanatory variables as well.

We may carve out government-owned NBFCs (like PNBHF and LICHF) from the list, add more such firms, and examine whether those exhibit moral hazard behaviour. Unlike the other NBFCs in our sample, the government-owned NBFCs do not have high leverage or cumulative liquidity ratios. We need to explore whether the presence of implicit government guarantees affects their systemic risk contribution as well.

We need to study the systemic risk contributions of smaller NBFCs and identify their determinants. We should understand whether the same forces shape the systemic risks of all NBFCs. The main difficulty with this exercise is availability of data. Most NBFC shares are not traded on BSE or NSE. Moreover, relevant balance sheet data may not also be available, on a consistent basis, for such NBFCs.

This chapter argues that NBFCs have become a vital component of the financial sector in India. Their smooth operations are crucial to the credit requirements of the unbanked population of the country. It is necessary to anticipate the drivers of systemic risks for these firms, so that appropriate risk management strategies can be adopted well in advance.

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9

Green Finance Market in India

Trends, Status and Potential for Bank Lending

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9.1. Introduction

Climate change has serious adverse effects on our planet, economy as well as the financial system. Frequent events of natural calamities in various parts of the globe has raised concerns and warnings over the sustainability of our activities. There is growing willingness now to act more responsibly, towards protecting and preserving the planet, by achieving net-zero emissions, for the benefit of future generations. There has been a rising trend in regulatory action towards defining the principles of sustainability and disclosures for organizations to adopt and comply with. There is a strong case for climate –related financial risk management, by Indian banks and FIs. India has been ranked as the seventh worst affected, among one hundred and eighty countries, in the Global Climate Risk Index 2021 (CRI 2021) of Germanwatch (Eckstein et. al. 2021). During Conference of the Parties (COP26), India declared its five-fold strategy to combat climate change risk. It includes a significant reduction of carbon intensity of India's GDP growth by 2030. This gives us a positive direction towards net zero emissions. Recently conducted COP27 edition of the climate change conference has further urged the nations to take immediate actions to limit global warming.

As per the Press Information Bureau (2022), Government of India circular, India has taken proactive role in raising certain critical issues pertaining to climate finance at the United Nations Framework Convention on Climate Change (UNFCCC). However, the concern is that India's emissions can still grow since it is a developing country whose leading priorities are inclusive development and poverty eradication. Otherwise, in its net zero pathway, India may end up compromising some economic growth

India's net zero emissions pledged at COP26 in Glasgow requires huge funding push in the nation's Budget 2022-23 to keep enough momentum to meet the deadline of 2070. Such huge funding is required to reduce dependence on coal and move towards renewable energy sources. India is one of five countries with the most exposure to extreme heat and also the third largest carbon emitter in the world. A recent estimate shows that aggregate investment support requirement to achieve India's 2070 net zero target will be Rs. 105 lakh crore with an average of Rs. 2.1 lakh crore per year. On September 23, 2022, Indian Banks' Association (IBA) set up a large working group comprising representatives of eighteen leading banks in India for handling issues regarding sustainability and green financing.

The banking system in India is, therefore, gearing up to address the requirements for developing climate finance markets. Climate change has been considered as a critical pillar 2 risks by the central banks as well as the Basel Committee on Banking Supervision (BCBS, 2020). Recently, the Reserve Bank of India (RBI)'s Sustainable Finance Group (SFG) has recommended that Indian banks need to adopt proper machinery at top level to review and enhance climate risk management initiatives. Reserve Bank of India (RBI) published its consultation paper

on Climate risk and Sustainable Finance and also one on the preparedness of Indian banks, on July 27, 2022. In the present consultation paper, RBI has proposed six areas and asked for feedback on these points. It includes immediate priorities in shaping policy discourse, way forward for the regulatory policy framework, main challenges in integrating the climate risk framework in Governance and overall timeline for implementation of disclosure/TCFD framework and other important details. It is worthwhile to mention that the task force on climate-related financial disclosures (TCFD) was formed in 2015 by the Financial Stability Board (FSB) to structure consistent and transparent climate-related financial risk disclosures for use by companies, banks, and investors in providing information to important stakeholders. It has now become important part of regulatory framework as part of growing efforts to address global climate change. It is expected that the pressure on businesses to act to the TCFD's recommendations related to governance, business strategy, risk management (process to identify and assess climate risks) and metrics & targets (emissions, climate related risk and opportunities) will scale up in future.

This chapter is an attempt to contextualize the market environment for green finance in India. Section 9.2 discusses the impacts of climate change upon financial performance of firms. Section 9.3 brings out the trends and impacts of green finance market in India highlighting some of the challenges, such as green labeling of new issues. Section 9.4 provides some empirical analysis using data from various levels, such as GDP per capita, carbon emission per capital and default rate in manufacturing sector, financial markets, before linking firm specific ESG scores and carbon emission data to credit rating. Accordingly, it attempts to derive certain key policy recommendations for enhancing green finance by banks. Section 9.5 provides concluding discussions to the chapter.

9.2. Climate Change and Financial Risk

Climate change may lead to economic damage whose amount and exact time of occurrence cannot be known in advance, but could be quite severe for financial institutions. The Basel Committee on Banking Supervision (BCBS, 2022) has highlighted that banks and the banking system are exposed to climate change through macro and microeconomic transmission channels that may arise from physical and transition risks. Natural hazards like flood, heavy rains, heat waves and wildfires can cause physical climate risk which appear in clustered regions and often exacerbate each other. For commercial banks, physical risks can materialize directly through their exposures to climate shocks through housing loans and commercial loans. Such exposures manifest themselves through increased default risk or clustered defaults in loan portfolios. Credit risk will increase if climate risk drivers reduce borrower's ability to repay and service debt. An abrupt and unexpected implied escalation of climate regulation (such as the carbon tax, restriction in greenhouse gas emissions, environmental fines or transition to low carbon economy etc.) can act as a strong exogenous shock that can influence borrower creditworthiness due to rising cost. Further, companies receiving huge environmental penalties from regulatory due to waste pollution, carbon emissions, and plastic and car producers losing significant amounts of market share due to change in legislation may adversely affect their cash-flows and dent their creditworthiness. Loans not being repaid due to crop failure and business closures due to pandemic situations may lead to simultaneous defaults. Such climate shocks can trigger fire sales at distressed price which may lead to manifold increase in loss given default (LGD).

Transition risks arise from the adjustment towards a net zero economy that requires drastic changes in policy, technology as well as shift in consumer preferences. Transition risks may hardly hit banks' loan book if there is a surge in carbon prices which may lead to rise in default probability of companies together. The sudden requirement for technology adjustment may also lead to erosion of market values of companies leading to rise in credit risk for lenders. The effect may be more prominent in high carbon intensive companies than its less carbon intensive counterparts. Many studies have recommended that economies must decarbonize their energy sectors to fulfil their climate policy

objectives. It requires huge financial resources to make investment in low carbon energy infrastructure. According to a study published in the journal Nature by Welsby, Price, Pye and Ekins (2022) almost 60 per cent of oil and gas reserves and 90 per cent of known coal reserves to remain unused to contain global warming to 1.5 degree Celsius (the Paris Agreement target). With this transition, the fossil fuel resources that will have to be abandoned (such as pipelines, power plants etc.) will end up as liability before its anticipated economic life and will be termed as "Stranded Assets". Accordingly, companies extracting oil, gas and coal will be severely affected by stranded assets due to transition to lower carbon usage. The other sectors using fossil fuels as inputs for production (such as Aviation sector) will also be adversely affected. Zhang, Mohsin and Hesary (2022) through a panel quantile regression model estimated the impact of green finance on environmental protection. They find CO2 emissions are increased due to factors like economic growth, energy consumption, trade and exchange as well as foreign direct investment. These economies or sectors will also be more vulnerable to environmental crisis. Therefore, solvency of the companies will also be dependent on performance of financial parameters. The study finds that carbon emissions will be reduced by green finance and for this promoting digital finance and carbon trading market would foster sustainable development. Climate finance supports the activities of climate change adaptation and mitigation to achieve low carbon economy and thereby give financial stability.

Research on the relationship between ESG parameters and financial performance of the companies have been conducted for decades. These studies discovered positive relationships between ESG performance and financial parameters. Corporate investments in environmental sustainability had no immediate impact on financial performance, but they had positive long-term impacts (Hang, Klingeberg and Rathbeger, 2020). Research conducted by Dorfleitner, et al. (2018) on the cross-sectional data of the companies with high ESG ratings found that returns were 3.8% higher per standard deviation of ESG score in the mid and long term. The ESG integration strategic benefits actually outperforms negative screening in a firm's risk analysis (Khan, Serafeim and Yoon (2016). Whelan, et.al. (2021) studied the relationship between ESG and financial performance of firms. They find companies experience better performance in terms of Return on Assets or Return on Equity or improvement in stock price relative to conventional investment approaches. German green mutual funds outperformed their peers in terms of risk-adjusted returns, during the financial crisis in 2007-09 and performed equal during non-crisis situation (Fernandez, et. al., 2019). After the 2008 financial meltdown, the FTSE4Good stock market indices performed better and quickly regained their value compared to non-ESG stock market indices (Wu, et. al., 2017).[1] About 24 out of 26 ESG index funds outperformed their traditional equivalents during the COVID-19 pandemic (Hale, 2020).

RBI (2020) paper highlights the risks arising from climate change to the macroeconomic outlook and provides a review of available risk mitigating policy options. Eight high frequency indicators like tourist arrivals, automobile sales, electricity demand, total trade, index of industrial production, purchasing managers' index, IIP manufacturing food products and tractor sales were used to assess the impact of climate change. The study finds that rainfall has greater impact on the economy relative to temperature change. Ghosh, Kundu and Dilip (2021) in their research paper have demonstrated that extreme weather events can increase inflation in India. Using panel data of selected coastal states of India, their regression results provide empirical evidence that natural disasters adversely impact output growth, dampen tourist arrivals and raise inflation. The study recommends that is essential to strengthen disaster management capabilities, develop scenario analysis, incentivize green projects and promote green finance to enhance resilience to climate disasters. Last year, RBI (2022a) estimated the exposure of Indian commercial banks to green transition. The research report highlighted the increase in direct exposure risk to three fossil fuel based sectors-electric chemicals and automobiles.

1. The series FTSE4Good Index is considered as a good representative indicator for ESG (Environmental, Social and Governance) investors.

It also urged the importance of monitoring the fossil fuel value chain and its linkage with sectoral default risk. Accordingly the recent RBI (2022b) discussion paper emphasizes the importance of understanding the degree of physical and transition risks for our banking sector. It broadly covers the issue of climate risk and sustainable finance. It seeks to understand desired approaches to detection and disclosure of exposure of assets to climate related risks, frameworks for management of such risks and capacity building within the banking sector. Our study attempts to throw light on imminent impact of climate change on financing pattern, firm solvency and credit risk. It tries to examine the extent to which our banking sector will be impacted through such risks and reviews scope for alternative financing options available to effectively manage climate risk.

Risk can be thought as a random event that causes a negative impact on an organization's goals. It has three major elements: scenario, probability of occurrence and severity of its impact. The climate risk can be defined as known unknown and it requires lot of investigations to understand its damaging impact. Thus, the climate risk equation will look like:

Climate Risk=f (Climate Hazard, Exposure, Vulnerability) Equation 9.1

Thus,

Climate Risk=Prob. of Climate Hazard × Vulnerability Equation 9.2

The climate hazard is referring to the peril or event that has the capacity to damage or destroy a financial asset. The peril could be through cyclone, earthquake, and flood or due to rapid technology change.

9.3. Green Financing Trends and Impacts

Financing of green initiatives and projects have received immense boost through the instrument Green Bonds. Green bonds are fixed income securities used to finance projects that are favorable to environment and provide climate benefits. These issues need to fulfill certain requirements as per the Green Bond Principles, most prominently in their use of proceeds for certain projects labelled as green or those that have positive environmental and climate benefits. Green bonds are limited to those projects for which at least 95 per cent proceeds are designated for green projects aligned with climate bonds taxonomy. Though the income earned from these bonds are allocated for environmental friendly projects but are actually supported by the issuing entity's balance sheet.

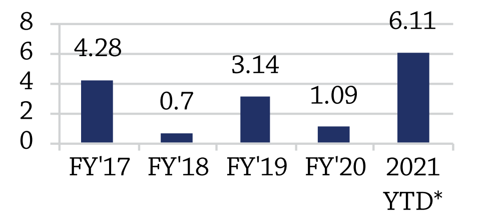
Green labeling requires certification of products and project activities in line with specific environmental standards. Such labelling acts as a positive information that distinctly separates a particular product or service as less harmful to the environment. It is an important initiative to address the problem of environmental deterioration and provides positive guidance towards sustainable development. However, green labeling may be unreliable without proper independent validation by third parties.

Due to such challenges, the various other products for sustainable finance, broadly defined as any form of financial product or service that sponsors environmental, social and governance (ESG) purposes while contributing to the achievement of environmental targets have emerged. These issues are more similar to general purpose finance but may include certain penalties for non-performance on targeted key result indicators.

Green bonds were first dispensed during 2007 from European Investment Bank (EIB) and World Bank. The market started picking up from 2014 and over time it has seen an exponential growth path with crossing USD 1 trillion in cumulative issuance in 2020. India has issued USD 6.11 billion in green bonds by end of 2021. This is quite evident in the accompanying Figure 9.1.

FIGURE 9.1

Amount of Green Bonds Issued in Billion USD



Note: * Represents data compiled up to November 30, 2021

Source: Climate Bonds Initiative

FIGURE 9.2

Green Bond Issuance by US, China and India

Display Currency U.S. Dollar X-Axis: Issue Date Y-Axis: Domicile

Green Universe

Domicile:
China, United States, India

CHART China United States India Issued

Source: EIKON Database.

In the year 2021, Reserve Bank of India has joined the network of central banks for Greening Financial System in promoting the exchange of best practices on green finance. Figure 9.2 compares Green Bonds issued by US, China and India. One Standard & Poor projection shows that the issuance of sustainable bonds will cross USD 1.5 trillion mark in 2022. India has also seen a record increase in Green Bond issuance in 2022. Corporate and bank issuers in India are tapping the climate related debt market more actively to reduce the carbon intensity and move towards carbon neutrality over time Green Bond issuance has several advantages like lower borrowing cost, better market reputation etc. More financial incentives in the form of tax concession (tax deduction for issuance cost or tax relief to the investors holding the bond), subsidy (to partially cover the cost) etc. from the Government will be crucial to accelerate the growth of India's green bond market.

Several studies (Krüger, 2015; Flammer, 2021) indicate that market news like issuance of Green Bonds act as a positive signal in the product market as well as better firm financial performance. The benefits come from lower cost of capital. Using a matching methodology, Flammer (2021) study results reveal that firms issuing Green Bond Issuers experiencing improvement in their environmental performance (e.g. an increase in environmental rating measured by Thomson Reuter's ASSET4 score). Green bonds provides positive environmental externality. Study by Tang and Zhang (2020) provides robust empirical evidence that stock markets react positively when firms announce issuance. One can argue that issuance of Green Bonds might therefore lead to better corporate performance and improve their solvency rating. This financing mode needs to be incentivized along with green loans.

9.4. Carbon Credits and Scope for Carbon Trading

It is now evident that emission of greenhouse gases (GHGs) from variety of human activities including production of goods and services cause global warming. In order to mitigate the same UNFCCC has reached a deal with 196 nations to reduce the emission of GHGs and the signatories (countries) have been made to submit their targets for reducing their GHG

emissions through various means and methods. The national targets are called Nationally Determined Contributions (NDCs). In order to achieve the national targets individual nations have to set the emission reduction target for various sectors and companies in the country. To ensure the attainment of the targets by individual entities the government will incentivize those entities who exceed the targets and will penalize those who do not attain the targets. The excess emission reductions are measured and certified by a designated authority and the same are referred to as carbon credits. Reducing or avoiding the emission of one ton of carbon dioxide will get one carbon credit. Reducing the emission of other GHGs like methane and HFCs will be converted into carbon dioxide equivalents. The carbon credits can be traded in the market wherein those who could not achieve the emission targets will be the buyers. The efficiency of carbon emissions and mitigation can be optimized through carbon trading.

Carbon markets offer many advantages:

- Environment friendly projects like renewable energy projects get financial incentive by way of carbon credits
- Emitters are penalized by making them to pay for carbon credits
- Carbon credits can also be exported to earn foreign exchange.
- Cross border trading in carbon credits will create competition among nations and will lead to development of most efficient technologies and processes that will lead to making a greener world

The awareness to climate change has opened up tremendous opportunities for banks and financial institutions to participate in carbon trading (Bello, 2022; Debkarma and Sengupta, 2022). The Paris Climate Agreement (often referred to as the Paris Agreement) reached in 2015 at the COP 21 held in Paris in 2015 is a legally binding accord. It has been signed by 196 countries in the world including India. The agreement demands the signatories to submit their nationally determined contributions (NDCs) to reduce carbon emissions. India in its updated NDC submitted in August 2022 (GOI 2022b) has set the following targets for 2030, among others:

- Targeted reduction of carbon emissions intensity of India's GDP by 45 per cent from 2015 level
- Achieving 50% cumulative electric power generated from non-fossil fuel energy sources
- Creation of 2.5 to 3.0 billion tonnes of Carbon dioxide equivalent (CO_{2e}) through added forest and tree cover
- To mobilize funds from domestic and developed markets to implement mitigation and adaptation actions

India has spelt out its long-term goal of becoming net-zero by 2070. Article 6 of the Paris Agreement (UNFCCC, 2022) which was adopted during COP 26 held at Glasgow in 2021 is paving the way for voluntary carbon markets for trading in GHGs, instead of Cap-and-Trade mechanism. One major requirement for implementing this is creating domestic voluntary carbon markets. South Korea has started its market called Korea Emissions Trading System (K-ETS) in 2014 and China has launched its national emissions trading system – Shanghai Environment and Energy Exchange (SEEE) in 2021. India has started the process for setting its national carbon trading market by making necessary provisions in the Energy Conservation (Amendment) Bill 2022. The draft blueprint for the same has been prepared by the Bureau of Energy Efficiency. It is argued that the introduction of carbon trading increases the cost of materials with a high environmental impact and hence businesses will be motivated to use less carbon intensive materials. Banks and financial institutions need to participate in the carbon trading market in order to broaden and deepen the markets.

9.5. Financing for Decarbonising Economies –Opportunity for Banks

India is the third largest emitter of GHGs in the world and its emissions from manufacturing industries has doubled from 1585.51 mtCO2e in 2005 to 2952.87 mtCO2e in 2018.

During the same period India's per capita emissions has increased from 1.45 tonnes to 2.24 tonnes. (GHG Platform India, 2022). As India is the fastest growing large economy and has set tall targets its contribution to GHG emissions will grow substantially in the future. All these open up the need for funding and other opportunities for banks and financial institutions. Government of India has taken several steps to reduce its carbon emissions. One major step in this regard was "National Action Plan on Climate Change released (NAPCC) encourages developments in the specific areas of solar energy, enhanced energy efficiency, sustainable habitat, water, sustaining the Himalayan Ecosystem, strategic knowledge for climate change, Green India and sustainable agriculture (PIB, 2022)". The share of coal in the energy basket is still going to remain significant in years ahead, while there is thrust for renewable or non-fossil based energy.

Government of India's another priority is to develop Safe, Smart, and Sustainable Transportation Network through dedicated freight corridors by Indian Railways, Jal Marg Vikas-National Waterways project, Sagarmala project for enhancing logistics using waterways and Bharatmala project for road and highways (GOI 2022a). Further, emphasis is given on emission reduction from mass rapid transit system (MRTS) projects, green highways through plantation and maintenance, adoption of hybrid and electric vehicles and launching vehicle fuel efficiency programmes. The Indian government has made a National Mission on Waste to Wealth which demands lot more work and investment for achieving its intended goals. The three different actions under this mission are: Waste to Energy; Solid Waste Management and Swachh Bharat Mission. Few other initiatives of the Government of India are: a) National Policy on Biofuels (blending 20% of biofuels with fossil fuels); b) Green India Mission (afforestation); c) National Agroforestry Policy; d) Fly Ash Utilization Policy (to make blended cement, bricks, tiles, etc.); e) Zero Liquid Discharge (ZLD) (for treating liquid wastes from industrial units and reusing water);

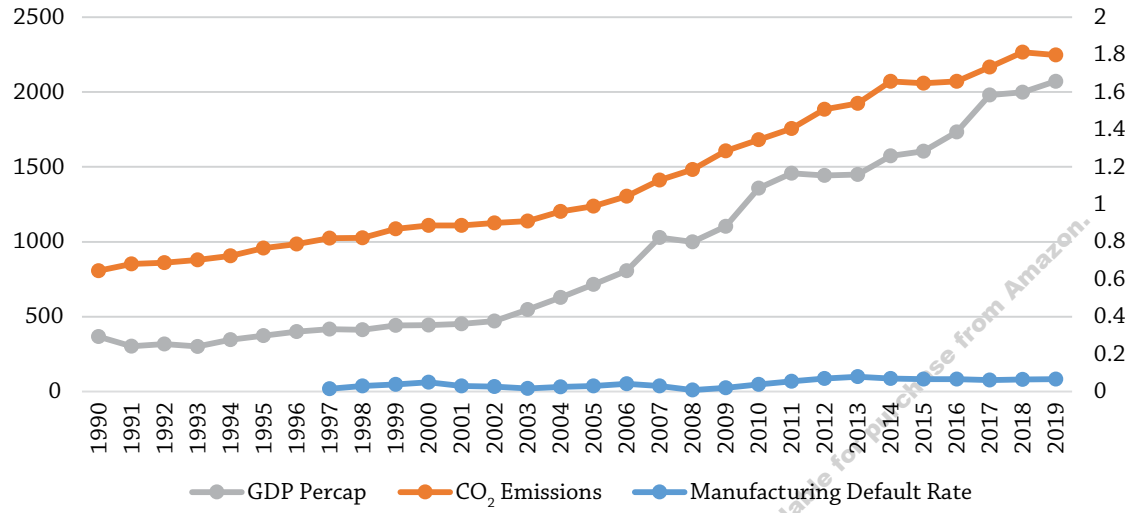
Recently, Government of India has approved Rs. 20,000 crore National Green Hydrogen Mission to enhance its renewable energy production capacity and facilitative its effective usage and reduce dependence on imported fossil fuels. The aim is to meet its climate targets and enhance non fossil fuel based capacity. The target under this scheme is to bring in over Rs. 8 lakh crore investments and over 6 lakh job creation. It is also aimed to facilitate Research and Development (R&D) towards alternative energy and avert nearly 50 million metric ton per annum of CO2 emissions by 2030. Green hydrogen uses will bring greater stability in cash flows of creditworthy companies who will be using the hydrogen products. Banks expected to extend loans to renewable energy-powered electrolysers that will be used to produce green hydrogen at ammonia plants and refineries, since demand for the gas is growing globally. The recent RBI report on Currency and Finance (RBI 2023) is focused on Climate Change and Sustainable Finance. It stresses the importance of substantial improvement in energy mix to achieve net zero goal by the year 2070. In this direction, it projects that India's green financing requirements would be around 2.5 per cent of GDP annually till 2030.

The above mentioned initiatives of the government as also the United Nations Framework Convention on Climate Change (UNFCCC) unveil many opportunities for banks. To be more specific, banks and financial institutions can contribute to the mitigation of climate change by participating in the following:

- Financing renewable energy that includes alternative solar power, wind power, hydro power, biomass energy, hydrogen fuel, and so on.
- Financing energy efficient industrial projects, buildings, etc.
- Financing emission reduction projects of industry
- Financing projects and businesses that are eligible and registered with the relevant regulator for carbon credits
- Many corporates would pursue net-zero targets and they can be provided funding support

FIGURE 9.3

Per capita GDP and CO_2 Emissions and Default Risk of Firms in India



Source: World Bank Data, CMIE Database.

Note: CO_2 emissions in unit of metric tons per capita; GDP per capita is at current USD unit.

- Accessing and channeling Green Climate Fund of UNFCCC to eligible projects in India
- Accessing funds of The World Bank, Asian Development Bank, and funds of other multilateral agencies that are meant for climate friendly projects and investing the same in India
- Enabling corporates to raise fund by issue of green bonds abroad
- Incorporation of ESG framework in credit appraisal framework and providing loans to companies and projects which comply with ESG standards
- Subscription to government of India's green bonds

It is utmost essentials for banks and financial institutions in India to establish a direct linkage between financial parameters and climate change factors for sustainable finance.

9.6. Empirical Linkage of Climate and Financial Risk

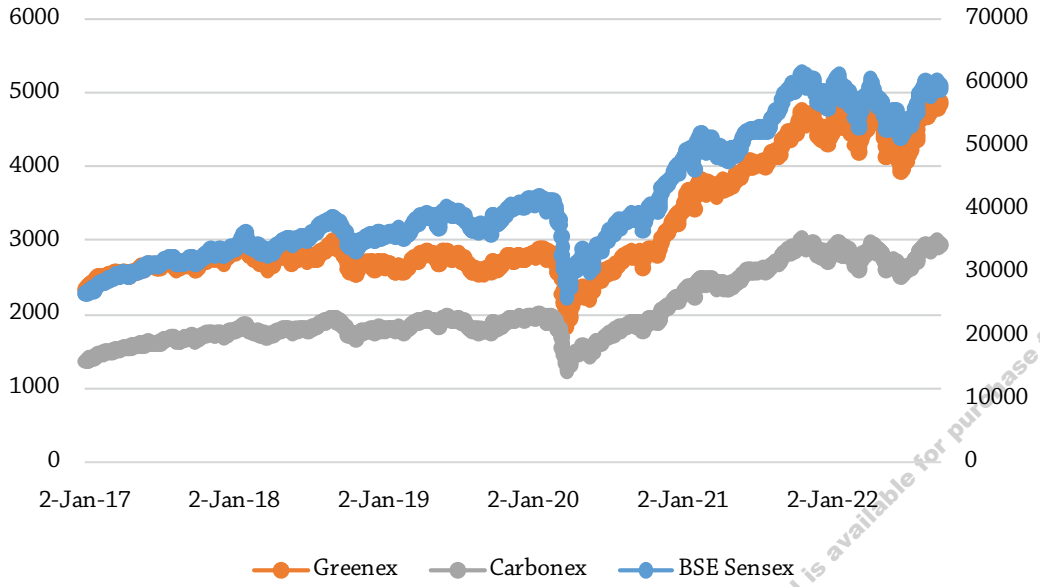
Macro level analysis

In Figure 9.3, with data from World Bank database and CMIE, India's economic growth in terms of annual GDP growth rate in relation to its carbon dioxide emissions and manufacturing default rates are plotted. There is a strong correlation between these factors. Correlation between GPD per capita and CO_2 emission is estimated as 0.989. The correlation coefficient between corporate default rate in manufacturing sector and CO_2 emissions is estimated as 0.791 and is statistically significant. In a recent study by Carbon Brief, it has been projected that a 1.5 degree Celsius to 2 degree Celsius temperature hike may reduce almost 8 to 13 per cent of Global GDP by 2100.[2] It can be argued that green finance or carbon pricing can be suggested to break the link for sustainable growth.

Many countries (like Germany, France, and Sweden) are in the process of decoupling economic growth from CO_2 emissions for sustainable growth path. Recent reports and research papers (Hannah Ritchie, 2021; Nate Aden, 2016; Wu, Zhu and Zhu, 2018) suggest that several countries are shifting to a low carbon path to address global climate challenges while prevailing economic security. It is therefore

2. The information is available at: https://interactive.carbonbrief.org/impacts-climate-change-one-point-five-degrees-two-degrees/?utm_source=web&utm_campaign=Redirect

FIGURE 9.4
Comparison of Performance of Various Market Indices



Source: BSE India.

necessary to identify the time horizon for phasing down fossil fuel across sectors in a planned manner. The risk implications for such shift as well as disinvestment from fossil fuel based assets need due consideration. Thus, there are systemic benefits of reducing credit risk through de-carbonization or encouragement in green financing.

Market-based Analysis

In the Indian equity market, it has been empirically observed that stock of Indian companies which are sincerely dedicated to reduce climate change risks have performed moderately well. A comparison of BSE Carbonex index with the benchmark Sensex return reveals such facts. Based on sustainability investments, S&P BSE indices provides BSE Greenex index. It comprises of top 25 stocks in the S&P BSE 100 that adopt relatively better energy efficient practices. In Figure 9.4, we have plotted the historical closing price of BSE Sensex, BSE Greenex and BSE Carbonex. Over the five years, if Sensex has given average annual return of 17.35 percent, BSE Greenex has gained by 14.33 percent and Carbonex by 14.48 percent. This indicates that financial markets for green finance are yet to culminate into better returns compared to the markets for traditional instruments and securities for finance.

An analysis of equity return performance in terms of Sharpe ratio further reveals that both Carbonex (0.39) and Greenex (0.31) have underperformed compared to Sensex (0.43). Sharpe ratio actually gives us information about their risk adjusted performance.

Firm Level Analysis

Here, we present a firm level panel data analysis to link ESG ratings, CO2 emissions with default risk and solvency position of selected companies. The balance sheet information for selected top 200 BSE companies was extracted from the company's annual reports and carbon emission data was obtained from India CDP reports. The ESG scores and emissions are obtained from Refinitiv EIKON database. ESG score of EIKON Refinitiv to reflect environmental, social and governance relative score in terms of ESG factors which also discounts ESG controversies. Many academic literature show that portfolios with ESG profile outperform non ESG finance.

TABLE 9.1

Detailed Summary Statistics

Variable	*Observations*	*Mean*	*Std. Dev.*	*Minimum*	*Maximum*
Rating_Scale	205	2.385	2.143	1	20
FSIZE	197	5.472	0.785	0.696	7.597
ROA	197	0.089	0.234	-0.116	1.811
DER	197	1.031	4.943	0	68.789
SALESTA	206	0.610	0.494	0.0007	3.294
ESG_Score	184	5.451	1.521	2	11
CDP_Score	200	4.25	1.829	1	8
CO2_Emissions	182	10.05461	25.21726	0.00284	250.9939

Source: Authors' own calculation based on Audited data of listed firms and CDP data and EIKON database.

Note: CO_2 emission is scaled to million tonnes unit.

The data and variables used in setting multivariate framework have been summarized in Table 9.1.

It is important to mention that both ESG, CDP as well as Credit Ratings scales are in order of their riskiness. We have used categorical variables to represent risk ratings. So a lower rating which get a higher risk scale. Similarly, better rating will receive higher ranking in risk scale and its values will be lower (scale 1, 2, 3).

We perform various univariate and multivariate analysis on selected top 200 BSE companies that are having disclosures in CDP reports over five years (2017 to 2021). We have performed multivariate probit regression analysis to link ESG scores and CO2 emissions with firm's credit rating.

Following regression framework was used:

$$RiskRating_{it}=\alpha+\beta_1 ESG_{it}+\beta_2 ROA_{it}+\beta_3 DER_{it}+\beta_4 CO2Em_{it}+\beta_5 SALESTA_{it}+\varepsilon_{it} \quad \text{.... Equation 9.3}$$

Where symbols I represent firms and t years in the panel structure. Risk rating is in ordinal form in order of risk categories (lower values mean lower risk and higher values imply greater credit risk due to lower rating). The regressors are ESG rating, Return on Assets (ROA), Debt Equity Ratio (DER), CO2 emissions level, and turnover ratio (SALESTA). Ordered probit model is more suitable in this panel structure.

The multivariate results are presented in the following Table 9.2. Probit regression is more suitable for ordinal rank based dependent variable.

TABLE 9.2

Ordered Probit Model to Link Climate Risk Factors with Credit Rating

Dependent Variable: Credit Rating (Rating_Scale)	*Model 1*	*Model 2*
FSIZE	-1.74***	-0.652***
	(-7.30)	(-4.42)
ESG_Score	---	0.129**
		(1.93)
ROA	-5.95***	-4.76***
	(-3.48)	(-2.93)
DER	0.998***	0.442***
	(4.99)	(3.16)
CO2_Emissions	0.0013**	---
	(2.02)	
SALESTA	-0.348	-0.635**
	(-0.98)	(-2.18)
LR Chi2 (d.f)	105.25 (5)***	59.50 (5)***
Pseudo R-square	0.34	0.19
Number of Observations	120	140

Source: Authors' own calculation based on Audited data of listed firms and CDP data and EIKON database

Note: CO_2 emission is scaled to 'million tonnes unit

Values in the parenthesis are the estimated z values by dividing the coefficients by its respective standard errors. *** denotes significance at 1 percent or better & *** denotes significance at 1 percent to 5 percent level.

It is quite evident from Table 9.2 regression results that key financial ratios like return on assets (ROA), turnover ratios (SALESTA) have significant negative effect on credit ratings. That means better the profitability and sales to assets, there is a higher probability that a company will achieve better credit rating (i.e. lower values in risk rating scale). On the other hand, if debt equity ratio is higher (DER), a firm will most likely will obtain lower credit rating (i.e. greater values in risk rating scale) due to higher leverage. Normally, bank's credit rating model will factor this relationship. What is interesting is that we find ESG score by companies have significantly positive influence on borrower credit rating (captured in Model 2). It means, if companies receive lower rating (that means higher in the order of risk scale), the likelihood that it will receive lower rating (or bottom rank in the risk scale) is also significantly higher. Hence, lower ESG performance causes greater credit risk in terms higher default risk.

Our findings will enable banks to establish linkage between credit risk and climate change risk. Similarly, higher CO_2 emissions by firms increases the likelihood of obtaining lower credit ratings by agencies and hence increases the risk of default. This will assist them to adjust their borrower level ratings and factor the impact of climate change on their capital as well as business decisions.

9.7. Concluding Observations

Banks would have many opportunities to grow their business as a result of the transition to a greener future given their disproportionate influence in the country's credit system. The traditional lending and investment approach would need to undergo structural changes to enable green financing. It is anticipated that breaking the link between emissions and GDP will be crucial to achieve climate goals.

Translating climate risk to economic and financial risks for banking sector would need new data and variables, such as emission levels, carbon footprint, dependence on fossil fuels, etc. These indicators need to be linked to ESG rating and integrate with credit rating and assessment of default risk. The banking system needs to take the lead to transition the economy to become more sustainable and resilient. This requires framing a clear ESG policy statement that will entail how the bank will support clients/borrowers taking an active role in the orderly transition (reducing dependence to fossil fuel, reduce emissions or servicing the segments having transition plans consistent with the banks 2030 emission targets) and helping to finance related technologies and infrastructure.

The regulator needs to incentivize the commercial banks to reduce fossil fuel based financing and move towards renewable energy financing. The Reserve Bank of India (RBI) has categorized renewable energy sector under priority sector lending. A further increase in loan limit for renewable energy under priority sector lending, risk weight concessions for lending to borrowers with good ESG scores will encourage banks to lend more. This way central bank can guide the flow of credit to climate saving sectors. Proper risk assessment and disclosure frameworks are essential to understand measure and understand risks from climate change. Further, the scenario of climate change can be an added attention for monetary policy to ensure overall macroeconomic stability. The government may explore innovative financing mechanisms through Green bonds, alternative investment funds for renewable energy sector. In the long run, a climate-oriented economy is going to be more efficient and therefore more productive.

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10

Central Bank Digital Currencies

Can it Have a Role in Enhancing Financial Inclusion?

Deepankar Roy | Partha Ray

10.1. Introduction

Currencies have a long history. In the long list of various shapes of and forms of currency, the latest kid in the block is Digital currency. What will it look like? Admittedly, not all digital payment methods will succeed and we already know that the use of cryptocurrencies like Bitcoin as money has failed. Recently, the value of these tokens has decreased by two thirds. Prices are separated from any underlying economic worth yet being frequently exchanged and subject to extensive speculation. Although stable coins are intended to reduce volatility, many of them have shown to be anything but stable and rely on the strength of the reserve assets that back them.

A central bank digital currency (CBDC) is a nation's fiat money in digital form. A CBDC will be produced and governed by central banks; it will promote financial inclusion and facilitate the implementation of monetary and fiscal policy; it will not be able to anonymize transactions like some cryptocurrencies because it is a centralised form of money.

To give businesses' and consumers' privacy, transferability, ease, availability, and financial security are the main objective of CBDCs. CBDCs can provide those who currently use alternative money transfer methods with lower-cost options, could also lessen the maintenance requirements of a complex financial system and reduce cross-border transaction costs. Digital currencies issued by central banks would also lessen the risks associated with utilizing them.

This chapter is devoted to a specific aspect of CBDC, viz., what role can it play in enhancing financial inclusion.

10.2. Financial Inclusion in Developing Economies

In developing countries bringing financial services to the underbanked/unbanked via technology is not enough, people must also have the basic skills to use self-service technologies like mobile banking. India has implemented the "phygital banking" model where Business Correspondents (BCs) go to rural areas with handheld digital banking devices and provide doorstep banking services to farmers and other villagers where there are no bank branches (RBI, 2010).

Financial Literacy is another major issue among poor people who lack awareness about financial products and services which match their needs. Many people who do have access to financial services do not know that there are alternative channels to access the same financial services at a much lower cost and in a more convenient way.

The lack of formal identification documents is also a major issue. Without proper identification documents the bureaucratic hurdles to open a bank account increase, disincentivising the poor/unbanked people from making any efforts to open an account. Social Benefit Schemes like Direct Benefit Transfers cannot be availed without a bank account. In India, this problem has been solved to a major extent after

the rollout of Aadhaar in 2009 but this problem is still prevalent in most African countries.

Financial Consumer Protection is very important to build trust among the unbanked/underbanked people to adopt the formal financial system. We see a lack of trust due to security and reliability issues with mobile banking, mobile wallets, internet banking, ATMs, PoS and other technologies used for financial inclusion.

Lack of collateral for access to credit is also an issue, having a transaction account is the first step towards financial inclusion, it not just provides remittance and payment solutions but also creates transaction data of the person, which can be used by credit agencies to determine the creditworthiness of the person. Micro Finance Institutions provide small-ticket, collateral-free loans to poor people where these transaction data play a key role in determining creditworthiness and the interest rate to be charged for proper loan appraisal and risk management. In developing countries, cash is so prevalent that there is no proper credit/transaction history of borrowers forcing banks and other financial institutions to demand collateral (World Bank, 2022).

Role of Technology

Technology has made financial inclusion easier, faster and affordable for governments of developing countries. In India, the JAM Trinity- Jandhan, Aadhaar and Mobile has played a key role (Jain, 2022). RBI comes out with a Financial Inclusion Index to capture to what extent financial services are accessible to the common people of the country. The three broad parameters that make up the FI-Index are Access (35%), Usage (45%), and Quality (20%). The Index shows India's score of 56.4 out of 100 which is better than the previous year's score of 53.9. (RBI, 2021).

Similarly, a mobile banking application called M-PESA was brought in by Kenya's largest mobile network operator named Safaricom in 2007 where people with no bank accounts could send and receive money on their mobile phones via SMS. People could also very easily convert their money in an M-PESA account into cash at M-PESA outlets distributed across the country. Many unbanked and underbanked rural population of Kenya got access to payments and remittance services in a very short span of time without the need for any formal banking system (Ignacio Mas and Amolo Ng'weno, n.d.).

There are deprived populations globally who reside in a state where their domestic currency does not churn as extensively in their area. Such community participants need to trade their merchandise with each other for a native economy to prosper. State currency is usually needed for this trade. Internal trade loosens up and the local market becomes unsteady due to low liquidity in a neighbourhood. To rectify this issue Community Inclusion Currencies (CICs) have been introduced which functions as a medium of trade. A certain community or network can only use these currencies. To inspire holders to spend the currency rather than hoarding it certain incentive mechanisms are designed. The productive ability of the community can support the CICs. Local government or aid organisations can possibly seed it but it can also function without any support. Mutual credit network is a term occasionally mentioned for CICs as (interest free) credit is being given by the members to each other in the system. Members are motivated to do business with each other since the credit can only be consumed within the network. This nurtures the development of network participants and keeps the value within the network. "Sarafu Network is a CIC that was formed in Kenya. It is the result of eleven years of experimentation by Grassroots Economics (GE). GE works with persons, parties and associations to assist them to issue credit against their impending production in the mode of vouchers. After this, GE facilitates network members to trade these vouchers among communities and themselves in exchange for goods and services. The vouchers function together with government issued currency and are not intended to substitute it. Digital vouchers as blockchain-based tokens called Sarafu are being issued to network members from August 2018. To trade their Sarafu tokens users do not need internet connection or a smartphone. As an alternative, transactions happen through USSD codes that can be sent between feature phones and the local telecom network—comparable to how a mobile

TABLE 10.1

Indicators of Financial Access Survey

	No. of ATMs per 1000 km², 2021	*Outstanding Loans from Commercial Banks (% of GDP), 2021*	*Outstanding Deposit with Commercial Banks (% of GDP), 2021*
Bangladesh	107.79	36.35	43.01
Honk Kong	3142.86	378.53	529.61
China (Mainland)	100.96	118.91	152.68
India	74.58	46.85	66.40
Japan	353.57	111.23	171.80
Kenya	4.16	26.91	36.80
Nepal	30.17	16.33	30.58
Pakistan	21.22	127.36	146.43
UK	220.72	246.96	299.86
Singapore	3660.08	86.96	98.31

Source: IMF (2021).

money system like M-Pesa functions. A point to be noted is that in the Sarafu setup, users are communicating with a blockchain and not using national currency" (African Crypto Research, 2021).

In China, the country that invented paper money during the Song Dynasty today has proved that cashless transaction is the future of payments. Super Apps like WeChat and AliPay provided payment services embedded with other value-added services like messaging, social media, online shopping, online food delivery and booking cabs all in a single app. This concept of Super Apps has been imitated by other companies around the world. Such embedded payment services have played a key role to help China bring millions of people out of poverty and have reduced the cost of intermediation significantly (Cag, 2021).

The IMF annually publishes the Financial Access Survey (FAS) for 189 countries based on data collected by central banks and other regulators. While financial hubs like Hong Kong and Singapore have many ATMs per 1000 km² but African countries like Kenya have very few ATMs per 1000 km² (Table 10.1).

Risk to the Banking sector from CBDCs

The creation of a CBDC will bring forth new priorities such as revenue strategy for commercial banks and data protection and environmental impact for regulators and citizens. Reassessment of their own role will become a major issue for commercial banks. Indeed, some CBDC models are based on a disintermediation system in which accounts can be maintained directly by central banks which are directly linked to households and firms. CBDC might appear to be more secure and liquid if its launch is accompanied by a competitive interest rate. This could lead to transfer of funds in cash from commercial bank accounts to CBDCs accounts of the central bank. The services, customers and profits may consequently diminish leading to the undermining of the banking sector. The issuance of CBDCs could also lead to financial instability (Maldonato et al., 2022).

"BIS, thus defined three significant foundational philosophies for central banks to reflect in issuing a CBDC:

1. It should not hinder with public policy intentions or stop banks from carrying out their monetary stability obligation (a "do no harm" principle).
2. It should be used in conjunction with and supplement prevailing forms of money (coexistence principle).
3. It should stimulate innovation and competition to increase the overall efficiency and availability of the payment system (the innovation and efficiency principle)." (Reserve Bank of India, 2022).

Domestic circumstances drive the design choices considered for issuing a CBDC in India. “There cannot be a one size fits all approach to CBDC, resilient and secure infrastructure is needed that can be scalable to support users on a massive scale, designs and systems will differ by jurisdictions, so will the risk, which will require significant research by a central bank before implementation” (Reserve Bank of India, 2022).

Key Design Choices for CBDCs

CBDCs all around the world are using different types of designs based on their suitability for the country in which they are being used in. When it comes to India, RBI has to consider a whole gamut of factors while deciding upon the design of an ‘Indian’ CBDC which is suitable for the country while taking into consideration all sorts of benefits and challenges the Indian financial system and economy faces; while also ensuring a much-needed financial inclusion of currently excluded segments of the Indian society.

Based on the usage, functions and different level of accessibility of the CBDC, it is distinguished into two broad types viz. general purpose (retail) (CBDC-R) and wholesale (CBDC-W) (RBI, 2022). “A CBDC design which envisages that the circulation of digital currency will be limited and end-users will only be financial institutions is called wholesale CBDC” (RBI, 2022). This type of CBDC is intended for limited right to use to chosen financial establishments, planned for the settlement of interbank transfers and associated wholesale transactions (Didenko & Buckley,2021). This design is being used for Project Jasper (Canada), Ubin (Singapore), and Inthanon (Thailand) (Didenko & Buckley, 2021).

On the other hand, Retail CBDC is an electronic version of cash primarily meant for retail transactions. Retail CBDC envisages potential availability for use by all viz. private sector, non-financial consumers and businesses. Retail CBDC is a direct liability of the Central Bank and so it is believed that it can provide access to safe money for payment and settlement (Didenko & Buckley,2021). This type of CBDC is essential for financial inclusion as people are directly involved in its use (RBI, 2022).

CBDCs can have either token-based or account-based internal design which differ mainly in verification need and process. In a token-based CBDC a person who holds the tokens at a given point in time is the owner of it which is equivalent to a bearer-instrument like banknotes. Genuineness about the ownership of a token can be verified only by the person receiving it (RBI, 2022). Meanwhile, in account-based CBDC systems, control of the account is linked to the account holder’s identity similar to the typical bank account model (Didenko & Buckley, 2021). “Maintenance of record of balances and transactions of all holders of the CBDC and indicating the ownership of the monetary balances is required in account-based system” (RBI, 2022).

Based on the respective roles of the central bank and the private sector in facilitating access to, and use of a CBDC there are three prototypes for the issuance and management of CBDCs across the globe. Structure of legal claims and the record kept by the central bank are the key differences (RBI, 2022). Firstly, we have the ‘direct CBDC model’ which is being considered for e-krona of Sweden, Sand Dollar of Bahamas and DXCD project of Eastern Caribbean States. In this, the central bank is repositioned as the only provider of CBDC for citizens (Maldonato et al.,2022). Secondly, we have ‘The indirect (or synthetic) CBDC model’ which has been chosen for Jasper of Canada, Khokha of South Africa and Aber project of Saudi Arabia and United Arab Emirates. In this model commercial banks would issue their own e-money, 100% backed by the CBDC as they are Payment Services Providers (PSP). In this model, CBDC could be held in an account/ wallet with a bank, or service provider (Maldonato et al.,2022). Finally, we have the ‘Hybrid CBDC model’ which is being incorporated in e-CNY of China, e- euro of European Union and Ubin project of Singapore. In this, “the central bank would directly issue CBDCs to end users and would rely on commercial banks, or other PSPs, to manage the transactions, KYC and related services” (Maldonato et al.,2022). Table 10.2 provides a comparison between CBDCs and existing central bank money.

TABLE 10.2
Important Design Characteristics of Central Bank Money

	Current central bank money		*Central bank digital currencies*		
	Cash	*Reserves and settlement balances*	*General-purpose*		*Wholesale-only token*
			token	*accounts*	
24/7 accessibility	✓	×	✓	(✓)	(✓)
Anonymity vis-à-vis central bank	✓	×	(✓)	×	(✓)
Peer-to-peer transfer	✓	×	(✓)	×	(✓)
Interest-bearing	×	(✓)	(✓)	(✓)	(✓)
Limit or caps	×	×	(✓)	(✓)	(✓)

✓= prevailing or likely feature (✓)= possible feature ×= not typical or possible feature

Source: Aggarwal (2020).

10.3. CBDCs for Financial Inclusion: The Opportunities

Cash is the most popular way of paying for goods and services at retailers. Micro, small, and medium-sized enterprises (MSME) merchants make and take over USD34 trillion in payments per year in the form of wages and salaries for employee's payments to suppliers, and receipts from customers according to a report by the World Bank Group and World Economic Forum. Estimates place the percentage of payments made electronically at 44%, with cash or checks accounting for the remainder (World Economic Forum, 2016). Offline CBDC can fill this gap. A retail CBDC uses NFC technology with RFID module to make payment in offline mode. For example, recently introduced eCedi by the Bank of Ghana aspires to be usable by everyone and anywhere in the nation, even when there are no mobile data networks in rural areas. As a result, its design strives to utilise and make it possible to use offline payment capabilities (Bank of Ghana, 2022).

A CBDC can save cash management expenses, which are often high in developing nations due to things like high distribution and storage costs and dependence on bank branches (Raghuveera, 2020). It can reduce the expense of preserving the availability of physical money and safeguarding it from forgery. By lowering bookkeeping, operating, and payment reconciliation expenses, it can also help private payment system operators (Cenfri, 2019). Lower cash logistics may be advantageous to businesses, while reduced ATM withdrawal fees may be advantageous to consumers (Cenfri, 2019).

As compared to physical cash money laundering, proliferation and terror financing can be controlled to a great extent by usage of Blockchain or Distributed Ledger Technology in CBDC. This is because the central banks would typically control and monitor issuance of CBDC tokens through themselves or through banks and authorized non bank entities. Hence many-to-one ("collection of donations") and one-to-many (distribution of e-cash) transactions could be easily tracked making it difficult to fund the terrorist organizations as the central bank can implement a mechanism to track the transactions originating out of or terminating into CBDC accounts which are under the lens.

The use of CBDC creates an electronic trail and as such this could be useful in assigning any credit score more efficiently to individuals and could be, theoretically, used for monitoring spending vis-à-vis repayments thus helping reduce NPA of the banks.

One of the biggest challenges in farming communities, is inadequate compensation to farmers and the leakages in the subsidies due to multilayered hierarchy in the agricultural produce markets. While much headway has been made to ameliorate their lot, by enabling payment for purchases using smart cards, use of CBDC will allow them to create a digital record of transactions that can be used for directed subsidy and

credit access. To reach vulnerable individuals, governments can also use CBDC to issue welfare vouchers. To reach farmers who have been impacted by climate change-related disasters the CBDC-enabled G2P payments with a high level of finality and irrevocability can be used. In addition to ensuring that the next payment will be received, digital payments are advantageous because they make payments more predictable and reliable, which may enable people and households to plan and make long-term investments that can boost resilience. "CBDC could also be developed as an continuously-offline bearer instrument, for example, on a stored-value card, as was the Bank of Finland's Avant CBDC started in 1993" (Grym, 2020).

"Retail CBDC can be developed to lessen identity gaps, and mobile phone and digital access divisions by its exclusive capability to produce digital identity proxies and permit offline abilities even though being gadget agnostic. Among all application scenarios, a crucial feature of CBDC's value hypothesis is its tried capacity to drive interoperability and channel omnipresence for users by providing appropriate payments across any provider – via any apparatus, to any provider – as a common device. This standing as a general-purpose or ubiquitous gadget is a key difference from other digital instruments like electronic (e)-money or electronic money transfers (EFTs)" (Alliance for Financial Inclusion, 2022).

"CBDCs could offer a chance for governments and central banks to stimulate widespread access. If accepted as legal tender, governments will try to guarantee CBDC is available and used by all citizens. Where central bank and market forces have been incapable to bring about interoperability so far, CBDC could provide the requisite interoperability and interlinkages with different payment highways. CBDC can also be used by the public establishments to create a base level of service quality and put competitive force on private sector providers to upgrade upon their delivery of financial services" (BIS, 2022).

"To tackle some vital concerns in the current payments scene many central banks see CBDC as a novel instrument. CBDC systems could be designed in a way that includes all PSPs, banks and non-banks; offers a strong and low-cost public sector technological basis and innovative interfaces; offers low service fees; reconsiders access policies to embrace all; permits remote registration; simplifies access of merchants, micro and small enterprises; allows access to special groups with constraints; and nurtures interoperability with domestic and cross-border systems, without the inadvertent fallout of new patterns of exclusion. If designed with inclusion in mind, CBDCs form an extension to the policy toolbox to support access to payments and financial services for all" (BIS,2022).

Table 10.3 below summarizes demand and supply side hurdles for financial inclusion and the CBDC characteristics and use cases that could address them. This can provide a basis for design alternatives by regulators and policymakers.

10.4. Financial Inclusion through CBDC: The Challenges

Onboarding the remotest area of the country to the financial system and providing affordable financial services to the citizens with the least possible intermediation refers to financial inclusion. Governments across the globe are looking at CBDC as a facilitator of their financial inclusion goals. But, the question is, Is CBDC an optimal way to financial inclusion? It is still an area of exploration, financial inclusion through CBDC comes with certain challenges that we have explored as follows.

CBDC requires some infrastructure such as internet connectivity, electricity, households having smartphones, proper cellular network coverage, onboarding with digital payment systems, etc. The aforementioned infrastructure is available with some of the countries, but on the larger side, other countries have to upgrade themselves to these basic infrastructures for somewhat smooth functioning of the CBDC. Taking India as a reference, India has a robust digital payment system since the introduction of UPI, in October 2022, 7,305.42 million transactions amounting to INR 12115.83 billion were directed through UPI (NPCI, not dated), there already exists an ecosystem with significant volumes, which makes it hopeful to be successful in the proper implementation of

TABLE 10.3

CBDC Characteristics and Financial Inclusion Hurdles

FI Hurdles	*Market Context*	*CBDC Characteristics*	*Use Cases Promoted*
Demand-Side	1. Trust	> Because of bad practices there is low faith in commercial providers > Absence of control over transactions (cash can at all times be accessed and any alteration in income can be noted instantly) > Absence of appeal if problems happen	> Accessible 24/7 > Clearing and value transfer happens immediately > Payments are irreversible and final > Wallet audit trail and recourse process to restore locked value > During network issues or dearth of airtime there is offline capability > CBDC with smart card capability, cost is low, airtime or phone not needed, and have both offline and online capability
	2. Fees	> High apparent fees for transactions > Monthly account or wallet fees destroy value	> Risk can be reduced due to decentralized distribution, intermediaries have less participation, channel operational and security processes are reduced due to use of a secure instrument, this leads to overall lower costs > There is accumulation of scale advantages due to ubiquity of channels
	3. Merchant acceptance	> Tax evasion and privacy > Merchant-specific KYC records are absent > Merchants do not have access to POS terminals	> Tax payments are automated > POS is not needed by merchant; NFC reader or mobile phone can be used by them > CBDC wallet offers value-added services
	4. Literacy	Low levels of financial and digital literacy	Designed for simplicity
	5. Identity	Dearth of identification both digital or physical leads to exclusion as KYC regulations demand the same	> CBDC can turn out to be an identifier > Digital identity proof options in keeping with FATF guidance > Can be associated in digital ID stack and can be implemented as part of a national ID
	6.Connectivity	> access to high-speed internet is deficient > Access to smartphones is minimal	> Offline and online capabilities > Design for low connectivity and feature phones
Supply- Side	1. Interopera-bility	Due to a dearth of interoperability inter-provider payments are expensive and complex (it is performed through third parties or bilaterally)	Through payment instrument standardization CBDC reduces the need for complex and new integrations thereby lowering provider costs and soothing out the processes
	2. Cash Management	> Liquidity management is inadequate > PSP access points are inadequate > Liquidity costs are high	> Through more direct access to liquidity for rebalancing it enables better liquidity management > As liquidity restraints are eliminated it allows each access point to assist more clients > The costs involved in handling liquidity risks will be reduced due to lesser liquidity risks
	3. Instant payments	Inclusive instantaneous payment systems are constrained by legacy systems. To manage credit and settlement risks existing systems tie up PSP funds	Immediate clearing and settlement can be enabled by CBDC, credit and settlement risks can be lowered

Source: Alliance for Financial Inclusion (2022).

CBDC, on the other hand, various countries in the region lack the hands-on experience.

Smartphone penetration is important to develop and enable mobile wallets with a sufficient level of security. Financial and technological literacy are other important pillars for the successful implementation of CBDC in the retail segment of any country as they help the smooth functioning of the system and subsequently reduce the operational costs of CBDC at a granular level, but the challenge lies in educating the users of the facility, given the scarce resources and complexity of the task small countries may find it difficult to achieve the targets.

Another challenge faced by the governments and central banks is the level of trust the citizens have in them, taking the payment systems to the next level for the retail market involves a crucial factor of trust. The trust factor is a crucial one due to the certain events that some countries faced, Ecuador can be a suitable example, the government in the past had defaulted on their obligations on sovereign bonds, which led the citizens of Ecuador to consider keeping the deposits with the commercial banks were less risky than keeping them with the central bank (Central Bank of Ecuador, 2018). Thus, the reputation of the central bodies will play an important role in financial inclusion at the retail level with CBDC.

Taking CBDC to the masses will expose it to a greater risk of getting exposed to the breach of cyber security which doesn't even spare the people with adequate financial literacy. Keeping in mind the aforementioned risk there is a need for a sufficiently robust regulatory and legal framework for the same, such kind of advanced framework contributing to the handling of the risks with such high magnitude is missing in developing countries.

The introduction of CBDC in the retail market may also raise unwanted competition. Central Banks may get into competition with various parties such as commercial banks, central banks of other countries, and even with some payment system operators.

Approximately half of the population in India is financially excluded, according to RBI's Financial Inclusion index, which is published by RBI, currently is 56.4, this indicates that India is just a little above the halfway mark to financial inclusion.[1] The reasons for financial exclusion as identified by the government of India by National Financial Inclusion Strategy (2019-24) are lack of trust, absence of funds, limited awareness, insufficient documents with the public, high transaction costs, inability to approach the service provider, and services provided are poor (RBI, 2020). Some of these challenges may be attributed to CBDC also unless it is properly addressed before the full scale roll out.

With the implementation of CBDC, comes a lot of concerns regarding the security and safety of the transactions done by the players, going at the retail level the number of players increases substantially, and safeguarding their interests becomes a crucial task that generates a need for proper grievances redressal centres and framework.

For a CBDC to penetrate the retail market CBDC must have features like cash, such as anonymity while completing transactions, easy access, liquidity, and universal acceptance. Keeping CBDC anonymous, brings some other concerns to the table, which are money laundering, bribing, and other dark concerns. So, to control these concerns, a CBDC should be anonymous but to an extent of preventing the aforementioned concerns.

Financial Inclusion through CBDC also aims at providing financial services such as credit, insurance, and other government-driven initiatives and schemes to the masses at lower

1. In discussion with Government and corresponding sectoral regulators the FI-Index has been gestated by the RBI as "a comprehensive index incorporating details of banking, investments, insurance, postal as well as the pension sector. The index captures information on diverse aspects of financial inclusion in a single value spanning between 0 and 100, where 0 represents complete financial exclusion and 100 indicates full financial inclusion. The FI-Index takes three broad parameters (weights recorded in brackets) viz., Access (35%), Usage (45%), and Quality (20%), as its components, with each of these comprising of varied dimensions, which are computed based on a number of indicators. The FI-Index has been created without any 'base year' and as such it echoes collective endeavor of all stakeholders over the years towards financial inclusion. The annual FI-Index for the period ending March 2021 is 53.9 as against 43.4 for the period ending March 2017."(RBI,2021)

costs, this presents a challenge in minimizing the costs of transactions facilitated through CBDC, the cost of transacting through CBDC should be lower or at par with the traditional way of transacting and transferring funds of government schemes. If the challenge of lower transaction costs gets solved, the problem lies in every adult having at least one bank account to get onboarded on CBDC or such a model should be followed in which the account opening for CBDC is done directly by the Central Bank. As of 2017, two-thirds of the adult in the world had no bank accounts, at the same time in Africa this number was half, and around 40% in Latin America (Chen et al., 2022).

10.5. CBDC for Financial Inclusion: Potential for India

Problem of Financial Exclusion in India

Jan Dhan accounts, Aadhaar cards and penetration of Mobile Phones into India has created what is known as JAM (Jan Dhan-Aadhaar-Mobile) Trinity. This trinity accompanied by PMJDY scheme has led to a successful financial inclusion of previously un-banked people on a massive scale in the last few years.

RBI has still noted the limitation of over reliance on access to bank accounts particularly in a scenario where 'marginally banked' people do not fully utilize these accounts and continue to fall back upon the informal economy to meet their financial needs. The Financial Inclusion (FI) index published by the RBI currently stands at 56.4 (March 2022) which is little above the halfway mark to full inclusion. This points to existing challenges which perpetuate exclusion of large sections of the population and prevents them from engaging with the formal economy.

Absence of funds, inability to provide necessary documents, limited awareness and lack of trust are examples of structural factors which impede financial inclusion whereas market features which lead to exclusion are high transaction costs, remoteness of service provider, poor quality of services and absence of customer centric designs, among others. Furthermore, these factors disproportionately affect vulnerable groups such as women, micro and medium and small enterprises (MSMEs), remote communities and other marginalized populations.

Development of Digital Infrastructure

Under the Digital India programme, many Digital Infrastructure initiatives have been taken in India. For the sake of putting the role of CBDC, a brief discussion of the following digital forms of payments seems to be in order.

Bharat Broadband Network (BBNL): This project will create the National Optical Fiber Network (NOFN) and would connect around 2.5 lakh Gram Panchayats spread over 6600 Blocks and 641 Districts by laying optical fiber cable and would bring high-speed internet to remote villages.

DigiLocker: It is a digital wallet to keep critical lifelong documents/certificates as digital documents in a secure cloud-based platform. It is a step towards the government's plan of paperless governance. With DigiLocker citizens can store, share and verify digital documents issued by over 100 issuers which are both Central and State agencies.

Digital Saksharta Abhiyaan (DISHA): It is a National Digital Literacy programme to provide IT training to over 50 lakh people like ASHA workers, authorized ration dealers, Anganwadi workers etc. The programme aims to train non-IT literate citizens to become IT literate.

Direct Benefit Transfer (DBT): The goal of the scheme was to streamline and speed up the current government welfare schemes delivery system to ensure precise beneficiary targeting, lower fraud rates, and less duplication of paperwork (Government of India, 2022a).

Additionally, the Payment and Settlement Systems Act of 2007 resulted in the establishment of several Digital Payment Infrastructures like the National Payments Corporation of India (NPCI) which acts as an umbrella organisation for managing retail payments and settlements solutions in India. Some important digital infrastructures created by NPCI are as follows: "RuPay; Immediate Payment Service (IMPS); National Automated Clearing House (NACH); Aadhaar enabled Payment System (AePS); Aad-

haar Payment Bridge (ABPS); National Financial Switch (NFS); Unified Payments Interface (UPI); Bharat Bill Payment System; National Electronic Toll Collection (NETC)" (NPCI, 2022).

On February 1, 2022, India joined a growing list of countries who have publicly announced their interest in developing and deploying a CBDC. Though the Reserve Bank of India (RBI) has been exploring the topic for some years, the earliest mention of CBDCs was in a report dated February 28, 2019, by a committee headed by the Secretary, Department of Economic Affairs.

CBDCs should assimilate all possible features of the physical currency as it is equivalent to an electronic form of sovereign currency (RBI, 2022).

Global interest in CBDCs is guided primarily by a desire to protect monetary sovereignty against a surge of private backed digital currencies which are scalable enough to upend the existing payment system. For emerging markets and developing economies like India, a new form of fiat currency which is digital in form is seen as a potential alternative to the cash based informal economy and a key enabler of financial inclusion.

"The determining factor of the design of CBDC for India is the functions it is expected to perform, out of which one of the main considerations is that the design features of CBDCs should be least disruptive to the status quo of the banking and financial sector" (RBI, 2022).

How different is CBDC from UPI? In an interview, RBI Governor has explained the difference between UPI and CBDC and went on to say:

> "The first difference is, UPI is a payment system while the CBDC is the currency itself. Secondly, UPI involves the intermediation of banks, you pay somebody through mobile, then the message goes to the bank, your account gets debited, the bank transfers the money to the recipient's bank account and the recipient's bank account sends a message that so much money has been received. So, there is an intermediation of the bank. CBDC is like currency notes. ... What is more about CBDC is that there is an automatic sweep-in and sweep-out facility. 24 hours, you can draw CBDC and if you are carrying excess CBDC, you can put it back into your bank account. So, there is an automatic sweep-in and sweep-out facility. The third is the huge logistics, the cost of printing notes that is not there. Manufacturing paper, getting the ink, and having a printing press, all these things will become outdated over a period of time. Logistics-wise, CBDC will be much simpler, and it will be much faster." (Das, 2022)

Pilot Testing of CBDC for Retail by RBI in India

A pilot testing program on retail CBDC was launched on December 1, 2022 by the Reserve Bank of India in four cities, Mumbai, New Delhi, Bengaluru, and Bhubaneswar as part of the phase 1 of the project. The retail CBDC is named e-rupi (e₹-R), the central bank has partnered with four banks: State Bank of India, ICICI Bank, Yes Bank, and IDFC First Bank for the launch of its pilot project on retail CBDC. Subsequently, another four banks, viz., the Bank of Baroda, the Union Bank of India, the HDFC Bank and the Kotak Mahindra Bank will participate in the retail pilot (Government of India, 2022b).

The e₹-R is in the form of a digital token that represents legal tender. It is being issued in the same denominations as the paper currency and coins. In the first phase of the project, the participating banks will be offering a digital wallet to transact with the CBDC being offered by the RBI in selected cities. The payments will be designed in such a way that users can transact by scanning the QR codes available at merchant points, the payments can be made to both Person to Person (P2P) and Person to Merchant (P2M), and the CBDC will not earn any interest in the digital form but can be converted in other forms such as deposits with banks, the liability of Digital Rupi will be shown on the balance sheet of the Central Bank.

The testing of CBDC for retail will undergo a phase-wise expansion of features and geographies to test the robustness of the Digital Rupi (Economic Times, 2022). It has components based on blockchain technology. Onboarding of more than 50,000 customers and 10,000 small merchants including Reliance Retail which is India's largest retail chain has happened till now.

What uses CBDCs in India could be put into is still to be decided. Programming retail CBDC for specific uses is one of the thought process. For instance, any tokens delivered In connection to a government subsidy project could only be consumed on merchandises for that project. offline payments and programmability are other use cases being examined. A CBDC with the best of features will be rolled out in India based on the outcome of these experimentations (Singh, 2023).

10.6. Concluding Observations

A CBDC is a central bank public good which seeks to modernize payment systems and introduce a new form of currency, digital in form but with the convenience and liquidity of cash. India has made giant strides in financial inclusion through the Jan Dhan no frills accounts, Aadhaar digital ID and penetration of mobile phones commonly referred to as the JAM trinity. But gaps in MSME credit have adversely affected economic growth and employment opportunities in the rural and semi-urban areas which faced the brunt of the Covid crisis.

When the poor and marginalized transact in digitally native fiat money stored on decentralized ledgers, they create verifiable trails of cash flows and can tap into alternative methods of raising capital for their daily operations. Smart contracts provided on blockchains can automatically unlock a suite of applications such as embedded finance which can directly benefit those at the bottom of the pyramid. Conditional transfers (based on self-executing codes) of the digital rupee to 1.2 billion mobile phone users can be a gamechanger for onboarding the unbanked onto the formal economy. But there are clear risks of introducing a new form of fiat money, particularly with regard to disintermediation of the commercial banks. Central banks are carefully considering all options to do no 'harm' to the existing 2-tier financial system before proceeding with the implementation of a CBDC in their respective jurisdictions.

CBDC should be a token-based mechanism as India already has a pseudo-wallet-like infrastructure via UPI and for better facilitating the transactions with the least hurdles such tokens should be storable in both cloud wallets as well as in physical wallets such as in a mobile phone or a pen-drive like device for better usability.

The digital rupee wallet may be contemplated as a mobile app. Going forward, this app can have many attractive value-added services such as programmable rupee, based on tokenisation and smart contracts. This can easily automate the conditional payments scheduled as per the contracts. The app can grow in the future to become a multisided platform for cash management, fund transfer (including direct benefit transfer or DBT), trade financing (for example supply chain financing), lending (micro lending and P2P lending), remittances (say, cross-border), exchanging securities (instantaneous delivery on payment), information sharing (for e-invoicing and goods and services tax), taxing (direct and indirect), regulating, etc. It can even be a super app for the citizens of India in the upcoming years (Ray et.al, 2022).

Small transactions using CBDCs should be kept anonymous and may be able to operate in no internet connection areas. Larger transactions should be recorded to prevent money laundering activities. However, CBDCs could never provide the degree of anonymity provided by physical cash as every transaction and deposit could have digital footprint. Security should be given due importance since the token based system has a chance of receiving counterfeit token or double spending.

CBDCs should be designed in a way so that they facilitate easy remittances across borders as well, to do so the international acceptance of a country's CBDC is important. CBDCs can be made an attractive alternative for the current processes of the cross border transactions, since the current methods are of high cost and slow execution.

In a sense, CBDC, an entity, is still shrouded in mystery. It has huge potential for enhancing financial inclusion. The eco-system needs be developed with appropriate design backed by adequate financial literacy. The future looks challenging but exciting.

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11

Emerging Technologies and Cyber Security

Alka Vaidya

11.1. Introduction

For around three decades, Internet has become an essential part of global communication and directly or indirectly it has been integrated with people's lives around the world. Today, almost all types of organisations across verticals are using this widespread interconnected technology and have become a very much part of the cyber space. While different aspects of our lives are nearly intertwined with the cyberspace, any instability or insecurity in the same is bound to pose a lot of challenges. The technology is making our lives convenient, and yet it is also raising concerns about various crimes that are taking place in the cyber space.

The Indian banking sector has widely adopted internet and related communication technologies and has transformed India's digital landscape over a last decade. With the confluence of technological development, adoption of smartphones, improved data connectivity and progressive regulatory policies, the country has seen unprecedented growth in digital transactions. Simple and convenient payment modes such as Immediate Payment Service (IMPS), Bharat Interface for Money-Unified Payments Interface (BHIM-UPI), Pre-aid Payment Instruments (PPIs), etc., have helped India lead the world with a share of 40% global real-time payments being made digitally in 2021 (Das,2022).

Although, this unprecedented growth in digitisation is helping banks in offering cashless and convenient service to their customers, it is also raising concerns about various cyber-attacks resulting in data breaches or siphoning of funds. In last few years, not only number of attacks have gone up substantially, but the attack complexity and sophistication have also increased to a great extent. Today, banks are reasonably able to manage common threats such as viruses, keyloggers etc. with established security solutions. However, the traditional security solutions cannot protect them from more complex and custom-built attacks. In this scenario, banks need to adopt innovative ways to combat the new-age cyber-attacks where technologies like Artificial Intelligence (AI), Machine Learning (ML) and Blockchain provide a promising future. These key technologies are likely to drive the next wave of digital transformation and they also have potential to bolster cyber security preparedness of banks.

On the flip side, AI and blockchain are not panacea to every security problem nor are they impervious to cyber-attacks. Today, hackers are successful both in hacking blockchain based cryptocurrency platforms or launching an AI-driven cyber-attack against organisations. With this as a background, this chapter focuses on the opportunities and challenges of AI/ML and blockchain technology in the field of cyber security. It elaborates on how banks can leverage the features of AI/ML and blockchain in enhancing their cyber security posture and at the same time, what new threats are being faced with their adoption.

The chapter is organised as follows: The second section highlights few large-scale cyber-attacks faced by Indian banks and the evolving threat landscape. It also describes various regulatory and government initiatives in cyber security management. The third section gives background of AI/ML, its role in cyber defence and the opportunities it gives to hackers. The fourth section describes blockchain properties and its relevance to cyber security, few use cases of blockchain in security domain and various types of attacks that have happened on its widely used application, viz. cryptocurrency. The final section summarizes the discussions.

11.2. Cyber Attacks on Indian Banks

One of the important reasons for banks being targeted by attackers is that they handle vast amount of sensitive customer and financial information. The recent government data confirms the sharp rise in attacks on the banking sector (Ohri, 2022). In August 2022, the central government notified the Parliament that between 2018 and 2022, Indian banks recorded 248 successful data breaches of which 41 were reported by public sector banks, 205 by private sector banks, and 2 by overseas banks. The incidents of malware (malicious software) and ransomware are also on the rise. The Indian Computer Emergency Response Team (CERT-In) observed a 51 percent increase in ransomware incidents in the country in the first half of the business year 2022 (Sur, 2022).

Illustrative Examples of Cyber Attacks on Indian Banks and Payment System Providers

In recent times, we have seen several high profile cyber-incidents both in India as well as globally. Few such examples from Indian banking sector are mentioned below:

1. 3.2 million debit card data was compromised between May and July 2016, and it was not until September, the banking system was aware of this large scale hack. The sophisticated malware was injected into the systems of Hitachi Payment Services and it remained undetected and concealed during this period.
2. In Union Bank of India, hacker tried to swindle $171 million from the USD Nostro account of the bank, but the bank could get the money trail and recover it subsequently (2016).
3. City Union Bank suffered a cyber hack when hacker hacked into their system and transferred nearly $2 million via SWIFT to overseas banks in three transactions of which they could block one worth $0.5 million. (2018).
4. Cosmos Bank, Pune - a well-planned and highly-coordinated operation that focused ATM and SWIFT infrastructure of the bank and the loss was around $13.5 million. (2018)
5. Telangana State co-operative Apex Bank faced fraudulent transactions which siphoned off Rs. 1.96 Crore (2021)
6. With the help of sophisticated hacking tools hackers hacked into servers of Hyderabad based AP Mahesh Bank and Rs 12 Crore were siphoned off (2021-22).
7. CashMama, an Indian money lending platform, (now defunct), suffered a data breach that exposed the customer details such as full names, dates of birth, home address, bank account details, etc. (2022)
8. Hackers stole Rs 7.3 Crore worth of funds in 831 transactions over a period of 3 months from online payment gateway company Razorpay. (2022)

The attacks mentioned above have resulted in various risks for banks such as breach of customer data, business disruption, loss of reputation, post-breach cost of overhauling systems and processes, penal actions from regulators, etc. Such risks, if not managed proactively, may turn into 'systemic cyber risk' (Forescey, 2022). Especially, smaller banks are more susceptible to systemic cyber risk if they further digitize their operations and do not take into considerations the underlying cyber threats.

Regulatory/Government Initiatives in Enhancing Cyber Security in Banks

The Reserve Bank of India (RBI) has taken several initiatives to address cyber security issues in order to improve overall cyber resilience of banks. The RBI has issued comprehensive guidelines on 'Cyber Security Framework' to Banks in 2016 for implementing next-generation cyber defence capabilities. In 2019, similar guidelines were also issued to Urban Co-operative Banks. From time to time RBI has issued circulars, guidelines, awareness booklets such as:

- Cyber Security Controls for Third party ATM Switch Application Service Providers (2019)
- Master Direction on Digital Payment Security Controls (2021)
- Booklet on Modus Operandi and Precautions to be taken against Fraudulent Transactions – Banks (2022)
- Consumer Awareness - Cyber Threats and Frauds (2022)

The Government of India has also taken numerous initiatives in this regard, some of which are listed below:

- Indian Computer Emergency Response Team (CERT-In) has been operational since 2004 as a national agency for cyber security incident response.
- Cyber security awareness campaign on 'beware and be aware of financial frauds' is jointly conducted by CERT-In, RBI on the Digital India Platform.
- National Critical Information Infrastructure Protection Centre, was established in 2014, to monitor and forecast national-level threats to Critical Infrastructure including banks and to issue policy guidance, expertise sharing and situational awareness for early warning or alerts.
- "Cyber Swachhta Kendra" to provide detection of malicious programs and tools to remove the same.
- The new Personal Data Protection Bill (2022) when gets passed, would establish a legal framework about appropriate usage and protection of collected data by the Data Fiduciaries (such as banks).

The Changing Nature of Cyber Threats

In most of the attack examples above, one common concern is that, the final heist (or data loss) is not a result of a single, isolated incident such as malware or phishing email. On the contrary, the attackers have been able to carry out a series of tasks over a few days or months without getting noticed by the security solutions used by those organisations.

As the global internet traffic is on the rise, security analysts are finding it difficult to monitor the data volumes coming from several sources or detecting abnormal network behaviour, if any. With complex networks, it has become easier for hacker to successfully enter into a corporate network and pretend to be an internal employee, bypassing all external defences.

Banks cannot rule out the possibility of malicious insiders including staff or a vendor representative who would abuse their credentials to either leak the personally identifiable information of customers or to simply sabotage the systems due to past grudge against the organisation.

Another area of concern is customised malware that hackers keeps modifying to evade detection by traditional security technologies. A standard malware detection tool uses "signature based" approach where known malware samples are stored in a database against which the signs are matched. No doubt, such tools are industry-tested and effective against the known threats, but they cannot detect unknown malwares.

Today, financially or ideologically motivated hackers go after specific targets, especially aiming at the data breach. Such an attack is more persistent in nature in which an attacker targets a specific organisation, enters into their system, remains undiscovered for longer period of time and ultimately sends out the data to his/her desired servers. This phenomenon, commonly known as Advanced Persistent Threats (APT) usually exploits vulnerabilities that are not yet known to the public and cyber security community (a 'zero-day' vulnerability).

For the traditional intrusion detection systems it is always challenging to notice such an attack, due to its obfuscated nature.

Lastly, today, organisations are using tens of thousands of devices, but they have limited number of skilled professionals in their security operation centres. So, it is practically impossible to attend to thousands of security alerts received from their threat detection and monitoring solutions.

In this evolving threat landscape, technologies like AI and ML present a great opportunity as they can automate data gathering from various sources, identify anomalies and continually learn and self-improve at a pace that's humanly not possible. Considering the fact that today's cyberattacks are innovative and persistent, traditional security technologies are facing several limitations when it comes to detecting them.

In the next section, we discuss the role of AI and ML in cyber security.

11.3. Artificial Intelligence and Machine Learning

Though Artificial Intelligence (AI) has become a buzzword today, the origins of AI can be traced to late 1950's, when researchers had a strong assumption that 'every aspect of learning or any other feature of intelligence can be so precisely described that a machine can be made to simulate it'. Nevertheless, AI has never had a smooth ride, some reports criticised developments in AI for various reasons. Few techniques such as neural network gained prominence in 80's, but fizzled out later.

However, in the last 10 to 15 years, industries have shown renewed interest in several AI based applications and many organisations including banks have adopted AI in various business applications. The factors such as availability of vast amount of digitised data (both in structured and unstructured formats), incredible rise in processing power, low-cost storage with cloud based technology and enhanced global connectivity have enabled industry adoption of AI. Worldwide, retail industries like telecomm, banking and e-commerce giants became some of the early adopters of AI and its sub-domains like robotic process automation, machine learning, analytics, etc.

Machine learning (ML) is the major component of today's AI systems. It is a set of techniques that allow machines to learn in an automated manner through pattern recognition rather than through explicit instructions from a human being. The techniques used in machine learning are broadly classified as: supervised, unsupervised, semi-supervised and reinforcement learning. In supervised learning the past data fed to the algorithm which always contains one column with the known outcome – usually called as 'label'. e.g. such data could be about whether the transaction is fraudulent or not, email is spam or genuine, etc. Using this dataset, the ML model is trained which is subsequently used to find the unknown labels of fresh dataset.

In unsupervised learning, the input dataset does not have a column with 'labels' and all columns are treated on par. From such datasets machines learn the pattern and break them down into groups usually known as clusters e.g. user-activity logs which may be huge in size, can be segmented into groups to identify suspicious user behaviour or outliers that are present. The semi-supervised models use both labelled and unlabelled data and preferred when there is a limited set of existing labelled data.

Reinforcement learning algorithms learn the best actions based on the concept of rewards and punishments. Such a learning model usually interacts with the environment and after observing the consequences of its actions, it learns to alter its behaviour (Arulkumaran et al., 2017). The new generation Intrusion Detection Systems (IDS) are using such techniques where by effectively learning from the environment they can identify network intrusion in an automated manner. (Alavizadeh H et al., 2021)

AI/ML Adoption by Indian Banks

As per the PWC survey (2022), 83% of Indian Financial Service institutions indicate that 'enhancing customer experience' is the top driver of deploying AI based use cases in their organisations. Most of the Indian banks are using AI/ML based applications in the areas like:

1. Customer service and engagement with the help of chatbots.
2. Automate business processes with software robotics.
3. Understanding patterns in customer behaviour accordingly give personalised offers
4. Payments fraud detection and prevention, identity verification associated with Anti-Money Laundering (AML) and Know Your Customer (KYC).

However, adoption of AI/ML in cyber security is relatively limited in Indian banks. Some of the leading public and private banks have started using security tools with certain ML algorithms. With the help of outsourced partners and system integrators, such banks have created (or in the process of creating) platforms like Security Orchestration, Automation and Response (SOAR) or Next Generation Security Operation Centre (SOC). These platforms provide them powerful cognitive capabilities to detect, mitigate and prevent threats by using ML techniques. But majority of the banks in India are yet to make a sound beginning as regards to deploying AI/ML use cases in cyber security domain.

AI-ML in Cyber Defence

In the field of cyber security, one of the early adoptions of machine learning technique was in the area of filtering spam emails. e.g. Gmail, Yahoo, Outlook, etc. have been using ML in spam filtering process for many years. Several ML techniques such as k-nearest neighbours, neural networks, deep learning are being used to detect spam filters. Such models have now advanced to a level where they can detect and filter spam emails with about 99.9 percent accuracy (Dada E et al., 2019).

In addition to spam detection, there are many other areas where use of AI, ML is relatively recent. The following table (Table 11.1) summarises various types of cyberattacks and what types of machine learning techniques are prevalent in detecting these attacks.

Key Lessons for Banks

It can be seen from Table 11.1 that, for the behaviour based detection, unsupervised or reinforcement ML techniques are more commonly used in the industry. There may be unusual behaviour exhibited by networks or by a user, e.g. sudden increase of data transfer in the network or unusual uploads of files by a certain user could be the indicator of an impending cyber-attack. In cases like these, user behaviour modelling and anomaly detection algorithms would help banks in recognising such exceptions at an early stage of attack.

One of the important challenges for banks today, is how to counter the attacks or identify the incidents that are totally new. In absence of historical "labelled" data, banks need to adopt unsupervised machine learning models. This would help them in finding patterns of behaviour and then check the outliers that represent possible anomalous or suspicious activities.

As described in Table 11.1, supervised ML techniques can also be used to detect cyber-attacks or to identify fraudulent card transactions. However, in the world of dynamic threat vectors, when banks need to do behaviour based predictions, unsupervised and reinforcement learning based threat prediction could be a more practical approach.

AI ML: Benefits to Hackers?

While AI/ML has huge potential in predicting or detecting the security related incidents, bad actors can also take advantage of this technology in several ways. AI based hacking methods may be more effective because of their ability to learn the present environment and predict what might happen in the future. e.g. AI powered malware can evade static defences such as firewall. By observing and predicting the actions by security teams, they can subtly and frequently modify certain indicators to cause harm. By sitting in the system such a malware may send out relevant data with low chances of detection.

A highly targeted and tailored "spear phishing" emails are more labour intensive to construct. Such spear phishing emails can be generated

TABLE 11.1

Machine Learning Techniques Used in Detecting Various Cyber-Attacks

Type of an Attack	*Description*	*Machine Learning Techniques used*
Zero Day attack detection	In this attack, the vendor/developer (of an operating system or a database, etc.) is either not aware of a flaw in his product or has not yet released the solution to fix the same.	Outlier-based detection using Deep Learning Approach (Hindy, 2020) Hybrid supervised approach as zero day attack features are similar to that of existing attack.(Guo, 2023)
Distributed Denial of Services (DDoS) Attack	Servers get flooded with malicious requests and legitimate users fail to access them.	Supervised Learning Classification Techniques like Logistic Regression, Naive Bayes (Kumari et al.,2022), Decision Trees -Random Forest to trace the DDoS Attack (Lakshminarasimman et.al. 2017) Hybrid/Semi-Supervised ML Learning Clustering technique applied first to distinguish normal and abnormal traffic, subsequently decision trees, KNN techniques are applied on labelled data. (Aamir and Zaidi, 2021)
Evasive Malwares	The malicious software that remain undetected by traditional signature based anti-malware tools by evading them.	Deep leaning based behaviour analysis of malwares along with dynamic analysis of API calls made by the malware is conducted. (Hisham, 2015) Association based classification and rule generation with iterative learning(Chandrasekar et al., 2012)
Phishing attacks	Attacker sends a fraudulent message (usually in email) to trick a victim into revealing his credentials.	NLP based detection of malicious, Phishing URLs (Buber et al, 2018) Phishing website detection with RNN (recurrent neural networks) (Datta, 2021)
Malicious email Attachments with MS office and ZIP archives	Malicious email attachment is an entry to the hacker in organisation network	Deep Neural Networks and Gradient Boosted Decision Trees (Rudd et al., 2018), Deep Reinforcement Learning (Muralidharan et al., 2023)
	Internal Threats	
Unauthorised access	A malicious user may get access to systems as he/she is not given least privilege	Risk-Based Authentication- User behaviour prediction using Neural network (Jagannathan,2022)
Abnormal User Behaviour	- Abnormal Data Downloads - Source Code Theft - Stolen Credentials - Abnormal transaction pattern by the insider (clerk, teller, etc.)	Deep Learning based User Entity Behaviour Analysis (UEBA): Deep Reinforcement Learning and use of semi-supervised learning where real alerts are fed back to the system to fine tune the model and increase the efficiency of the model. UEBA gives an understanding of how users (humans) and entities (machines) normally behave and aggregates the anomalies per user and entity when it deviates from its normal behaviour (Shashank, 2016) User-behaviour anomaly detection is done with Convolutional Neural Network (CNN). (Wang,2017) NLP based sentiment analysis is done on email (subject line, sender, recipients, attachment, etc.)
	Network Behaviour Analysis	
Network Behaviour and Anomaly Detection	As a result of DDoS attack or Malware infection network may display anomalous behaviour	Unsupervised Learning such as K-Means clustering can be applied on Data Packets and packet header to form the clusters and identify outliers(Chunfen B, 2018)
Lateral Movement on network during Advanced Persistent Threats (APTs)	In APT based attack, attacker remains persistent on the organisation network and can move closer to valuable assets (data) by escalating his privileges and without getting caught.	Unsupervised Learning: Clustering – grouping the network users based on their roles, entitlements and identifying outliers (Lah,2018) Clustering for detecting lateral movement of Malware over the network(Bhasin et al., 2018)

Application Level Attacks		
SQL Injection	Attacker usually targets databases of websites by entering malicious code through input boxes provided in the web application. He may get hold of confidential data or may delete/alter the contents of the data tables.	Supervised Learning Techniques such as Logistic Regression, Decision Trees, SVM are used on data such as URL, user text input, text area, request header, etc.(Shaheed et al., 2022)
Cross-Site-Scripting	Malicious code is injected into a website which can send sensitive information to an attacker's web server	Supervised Learning techniques such as SVM, Decision trees, the Naive Bayes classifier, Logistic Regression based models.(Vishnu,2014) Multi-Layer Perception (MLP) Deep learning models are built using several URL features, the tags used, special keyword, redirections, etc.(Ayo et al, 2021)
Debit/Credit Card Fraudulent Transactions	Identifying fraudulent transaction on card (both card not present or present)	Supervised techniques like Random Forest, ANN, Logistic Regression (Ileberi, 2022)

by using "AI-as-a-Service" platform. A research experiment has shown that significantly higher number of people clicked the links of AI based spear phishing email than a human-written email. (Lim et al., 2020)

Criminals are using deep learning based fake audios and videos, commonly known as 'Deepfake' to carry out identity frauds. This technique uses facial mapping technology and AI that exchanges the face of a person on a video with the face of another person. Banks need to be careful about this, as it can be used for opening fake accounts.

If the security teams are using AI/ML models to identify breach attempts, they highly rely on correctly labelled data samples. However, such models are being poisoned with inaccurate data which could result in incorrect predictions.

Thus, today, industry is witnessing both 'defensive' and 'offensive' AI and hence security experts would need to fight 'AI' with 'AI' in days to come. It is imperative that banks need to automate their defence to disable AI based attacks. While machines deal with data crunching, skilled humans will play an important role to monitor and interpret AI's decision making.

11.4. Blockchain – A Distributed Ledger Technology (DLT)

The term 'blockchain' is no more unfamiliar in the context of banking technology. Since the publication of white paper on Bitcoin (2008), this technology has made immense impact across multiple industries such as healthcare, manufacturing, and government organizations. It is predicted to be the 'beating heart of finance' (Bruno, 2016).

In some ways, blockchain technology is similar to the internet which uses a decentralised network instead of a single server. Simply put, blockchain is a shared, replicated, add-only type of a database- where writing (or appending) is shared among the participants but validation must be performed by all the participants on that blockchain. With the help of cryptography-based distributed ledger, blockchain technology enables trusted transactions among untrusted participants in the network. Blockchain networks like Bitcoin are 'Public' networks where anyone can participate and it does not have a single entity controlling the network. Whereas, a 'Private' blockchain is managed by the central entity and participants on the network know each other. Though the original idea presented was about providing blockchain as a backbone to the world's first decetralised cryptocurrency, the other industries including banking have seen the potential of this platform for a variety of use cases beyond crypto.

Blockchain Adoption in Indian Banking Sector

Blockchain technology is being explored by many Indian banks in areas like trade finance, cross-border remittance and vendor financ-

ing. In 2021, fifteen Indian banks including the State Bank of India, three other public sector banks and eleven private/foreign banks have formed a consortium called Indian Bank's Blockchain Infrastructure Co (IBBIC) to digitise trade finance business process. Using a blockchain in trade finance, banks can avoide huge paperwork involved in it and blockchain would make it harder for a frauster to raise multiple Letters of Credit for the same good shipment.

In 2017, J P Morgan developed Quorum, a permissioned variant of Ethereum blockchain for enterprise solutions, which is used as Interbank Information Network(IIN). Seven Indian banks have joined IIN and aim to provide secure and fast exchange of information to facilitate cross-border payments in minimum time. (RBI 2020). The Reserve Bank of India has also been proactive in guiding banks for such developments through its regulatory sandbox environment.

As banks are pursuing their effort of using blockchain in business areas, they need to explore how decentralized, consensus-driven, immutable nature of blockchain makes it a sound use case in the area of cyber security. The following write-up describes how some of the inherent properties of blockchain would potentially help improve few areas of cyber security. It will also throw some light on the differing side and discuss the susceptibilty of blockchain to various types of cyber attacks.

Blockchain Technology and Cyber Security

Domain Name System on Blockchain

Traditionally, Domain Name System (DNS), which translates the domain names to machine readable IP addresses, has been operating on a centralised model and it is distributed across the world by several service providers. The current DNS system is vulnerable to certain methods of manipulation such as DNS hijacking or a redirection attack, which redirects user from the real location to a different, malicious, website. The Distributed Denial of Service (DDoS) attack is also a common phenomenon on today's DNS.

As against this, blockchain DNS is a decentralized DNS server that allows registering, managing, and resolving of domain names and related data exchanges without any centralised authority (Munene ,2022). In such implementations, the data such as domain name configurations could directly be distributed on a blockchain and entities involved (such as registries, registrars) could straightaway interact with this blockchain to manage the domain name. Some of the examples of such DNSs are: Ethereum Name Service (ENS), Handshake and Blockstack.

From cyber security point of view, blockchain DNS would bring certain advantages. Such a DNS, being decentralised and peer-to-peer network, it cannot be stopped. So, if there is a Distributed Denial of Service (DDoS) attack, it can be successfully mitigated and availability can be ensured 24/7. Such a DNS also uses the consensus protocol, and hence integrity of the data would be managed better, as it cannot be modified without consensus.

Blockchain for Digital Identities

Digital Identity (DID) is basically the digital representation of information relating to a particular individual, organization or device. Today, digital identities are no more restricted to usernames or email IDs, but they also include information such as individual's shopping preferences and website usage behaviour (Weston, 2022). Identity is an essential requirement for various tasks such as accessing banking service, government service, etc. Generally, traditional DID systems come with the burden of complicated paperwork processes and limited access. The existing state of digital identities has several challenges both for organisations and individuals. Such identities are usually stored by the organisations in centralised databases which might run on legacy software and it could be the prominent target for a hacker. This practice is also prone to identity frauds as users could manipulate different identities with the usernames and passwords for the websites as there is no standardized approach.

The blockchain based digital identity can solve many of these problems by focusing on

the mechanisms such as identity management, decentralized identifiers, and embedded encryption. In this, the user needs to sign up for a self-sovereign-identity which would give him/her full ownership and control without relying on central authority. Such an identity would give a user single login for different platforms be it social media or e-commerce website.

Most importantly, from bank's point of view, this would simplify the KYC processes. At present, every bank or financial institution need to individually perform the KYC process and stores a digitized version. With digital identity being maintained on a shared ledger, after taking customer's consent, banks will be able to access relevant parts of the stored data and perform due diligence.

Blockchain for Cyber Threat Intelligence Sharing

Cyber Threat Intelligence (CTI) is the process of identifying and analysing cyber threats. It is the threat information that has been aggregated, transformed, analysed, interpreted, or enriched to provide the necessary context for decision-making processes (NIST, undated). The primary purpose of this, is to help organisations to perceive the cyber risks in proactive manner and to make informed decisions regarding the response to those threats. The ability to exchange CTI in a secure manner and without compromising the privacy of participating entities is a big challenge for organisations at present.

A blockchain based threat intelligence platform can have various advantages. A decentralised threat information repository can avoid single point of failure and tampering of sensitive data. Blockchain can maintain account anonymity to maintain the privacy of CTI sharing party. By obtaining threat intelligence from blockchain, it is helpful to construct an attack chain, simulate the attack process, and then provide more accurate dynamic defence.

The banks which want to participate in such projects can on-board themselves on a decentralised trust network and leverage it to exchange respective threat indicators among the peers on the network. This would help the peers tune their defences against possible similar threats thereby avoiding the potential losses. Banks can also interact with various security agencies like CERT and NIST using such platforms.

Although, the dynamism of blockchain is helping cyber security domain, these blockchain based applications are not immune to cyberattacks. Especially, the most widely used application - 'cryptocurrency' has witnessed a few serious incidents in which victims world over have lost millions of dollars.

Attacks on Blockchain based Systems

In the recent past, security of blockchain-powered cryptocurrency has been questioned a lot due to numerous hacks and cyber-attacks on both crypto exchanges and individuals participants. Though exchanges have proliferated and become more advanced, as can be seen in Figure 11.1, many of them have become defunct after alleged hacks. Figure 11.2 represents the worldwide crypto heists till date (both value and volume) and shows the increasing trends with total fraud of about $9 billion (Tsihitas,2022).

With the rise in popularity of cryptocurrencies, today, cyber criminals are investing their time to find innovative ways to attack the underlying systems. Though it is extremely difficult to hack into blockchain per say, attackers are targeting the vulnerable spot in the surrounding systems to transfer/withdraw cryptocurrency. Some such attacks on cryptocurrencies have been described in the following part of the chapter.

Use Wallet Attacks

Consumers who invest in crypto often store their currency in a digital wallet in the form of a mobile app on their smartphones and just like any other app there are numerous ways to attack these apps. Unlike a physical wallet, crypto wallets technically don't store the currency. It remains on the blockchain, but can be accessed with the private key, stored in a wallet. Wallets in the context of cryptocurrencies is a place to store user's private key (somewhat similar to password which is known only to the owner). A public key (like a bank account number) or the "wallet address" is used to send and receive the money.

FIGURE 11.1

No of Platforms/Exchanges Affected

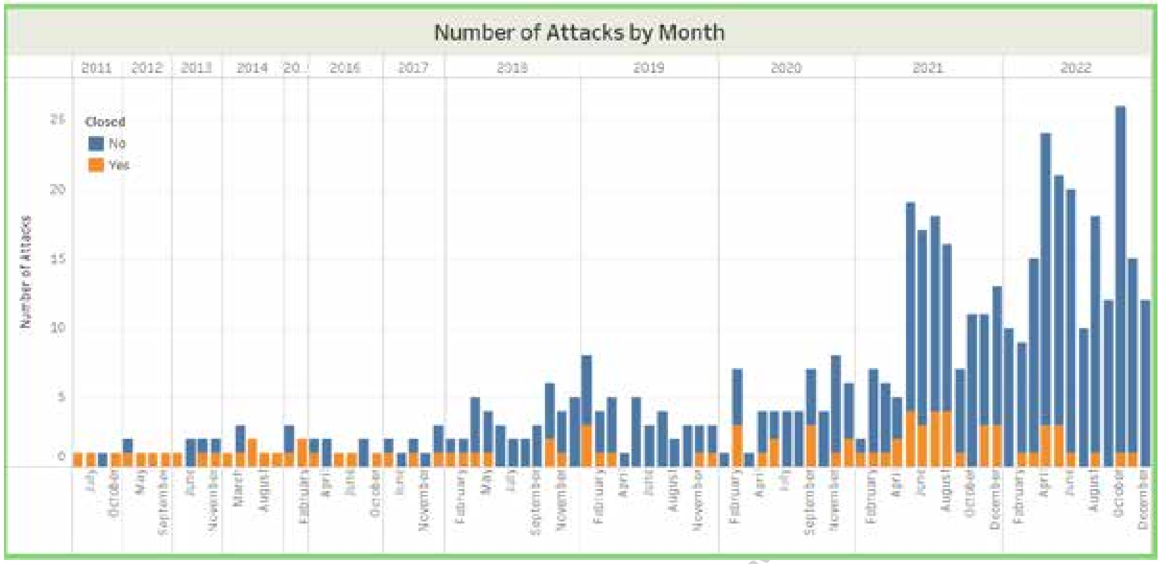
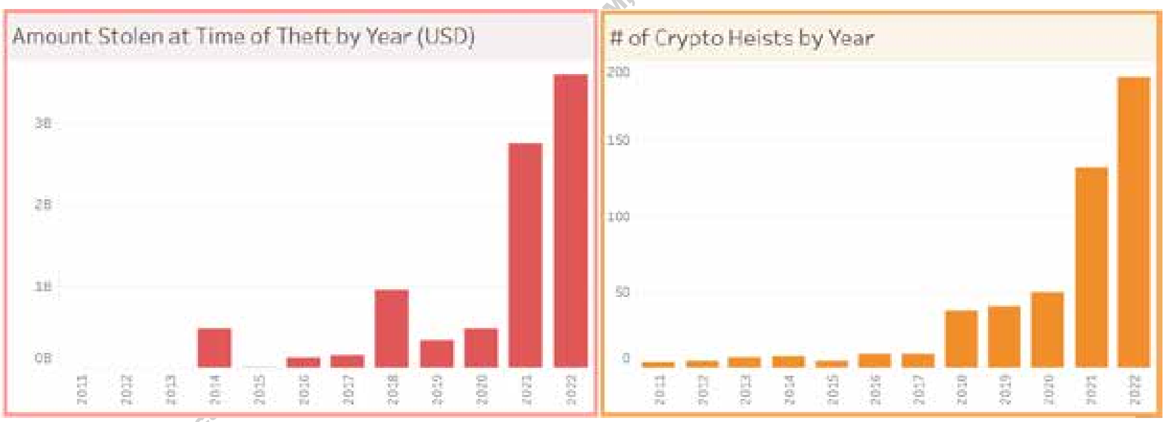


FIGURE 11.2

Crypto Heists in Value ($Bn) and Volume



Source: Comparitich.

To obtain wallet credentials (i.e. private key) attackers use both traditional methods like phishing, dictionary attacks, etc. or they apply sophisticated techniques to find out the vulnerabilities in cryptographic algorithms.

The wallets are classified under two main types: hot and cold wallets. A hot wallet (or a software wallet) is a form of digital storage or an app that you can access with your mobile phone or a computer, and is connected to the internet. As hot wallets are connected to the internet they are not as secure from hackers as their counterparts — cold wallets. A cold wallet (or a hardware wallet) is a physical device that keeps your cryptocurrency completely offline.

There are several ways in which these wallets can be attacked. A crypto wallet security vulnerability or any inadvertent malware download by the user can manifest into secret transfer of funds from wallets to unknown recipients. e.g. an Android malware 'Sharkbot' (of 2018) resurfaced in 2022 and it was found to have been downloaded by over 100,000 users. (Tech-desk-Indian Express,2022) This malicious app

was disguised as an app for trading cryptocurrencies on exchanges, such as Poloniex and Bittrex and it would trick users into granting them access to their login data.

Wallet users are also susceptible to traditional attacks like Phishing where a potential victim gets tricked into revealing sensitive information. In 2018, there was an attack on IOTA wallet. (Cimpanu, 2018) These wallets are initiated with an IOTA seed which is 81 characters long and similar to the private key. A hacker created a website IOTASEED.IO that looked very legitimate to new users. They trusted it and generated this seed. Then, when a user had used the seed to create a wallet, Iotaseed.io would use the seed to access a user's wallet without permission and steal the coins inside, quietly transferring them to another wallet address. As a result, in January 2018, more than $4 million worth of IOTA were stolen by the hackers from victims' wallets.

51% Attacks

When a single person or group of people gains control of over 50% of a blockchain network's validation power (mining power), it is called as 51% attack or a majority attack. This is usually achieved by hiring mining power from a third party. In the traditional sense, it is similar to the steps involved in finding mineral resources from mines, requiring huge amounts of energy, time and money to uncover something before others do. In this attack, the successful attackers gain the ability to tamper with transactions or to change the ordering of new transaction and forge blocks, by controlling 51% of the computing power of the entire network.

As a blockchain network grows and acquires news mining nodes the success rate of a 51% attack drops as the cost of performing a 51% attack rises significantly. On established and matured cryptos such as Bitcoin or Ethereum, the chance of such attacks is almost NIL as the financial costs would be so high that they would outweigh the benefits. But small cryptocurrencies are at risk of such attacks. In August 2020, 'Ethereum Classic' faced this attack where the attacker managed to reorganise 7000 blocks, or two days' worth of mining (etherchain_org, 2020).

DDoS Attacks on Blockchain Network

Traditionally, Distributed Denial of Service (DDoS) attacks are achieved by sending more traffic than the network can handle which overwhelms the underlying application. It is a popular belief that blockchain networks are immune to such attacks as a single node going down due to DDoS attack may not bring down the whole blockchain network. However, by flooding the blockchain with spam transactions, its availability for legitimate users goes down significantly. Most of the blockchains maintain a fixed capacity of blocks of a certain size at regular intervals. Anything in excess for the current block usually goes to memory pools and later it is considered for the next block. If an attacker floods many spam transactions, the genuine transactions would sit in memory pools and would not be added to the ledger.

DDoS, though, very difficult to execute on blockchain, it is not impossible. Cybercriminals look for network vulnerabilities and exploit them with the attacks like DDoS. In 2020, major crypto exchanges such as Bitfinex (Hong Kong) and OKEx (Malta) had suffered a massive DDoS attack. (Palmer, 2022)

Vulnerabilities in Smart Contracts

Smart contracts are simply programs stored on a blockchain and they are typically used to automate the execution of an agreement, without any intermediary's involvement or time loss. They are used to automate the workflow, triggering the next action when conditions are fulfilled.

Many blockchain attacks have happened due to certain vulnerabilities in a smart contract. There may be few weaknesses in smart contract which pose risks to the parties that sign the contract. For instance, bugs discovered in an Ethereum contract cost its owners around $70 million in 2016. It was using a language called 'Solidity' for implementing the smart contracts. It was targetted for a destructive attack – 'Re-entrancy'. It happens when the attacker empties funds from the target by continuously calling the target's withdraw function. Here, the contract fails to update the victim's balance and the attacker can continuously call the withdraw function to drain victim's account.

Central Bank Digital Currency (CBDC) and Cyber Threats

The concept of Central Bank Digital Currency (CBDC) has generated keen interest among central banks across the globe and India is no exception to this. The Reserve Bank of India, has already introduced the pilot project in the Digital Rupee – both in Wholesale (e₹-W) and Retail (e₹-R) segments in November and December 2022 respectively. CBDC is aimed to complement current forms of money and it is envisaged to provide benefits like more efficient payment systems and furthering financial inclusion. However, like existing payment systems CBDC ecosystem may also be vulnerable to cyber threats and hence the RBI has rightly acknowledged, 'Security has to be the prime design concern while designing CBDCs since inception'(RBI 2022).

The nature of risks may vary depending on the design considerations for CBDC . A blockchain or DLT based CBDC would require the involvement of third parties as validators of transactions and malicious validator nodes can pose security risks. On the other hand, the centralized collection of transaction data would pose risks related to privacy and security. Thus, the Reserve Bank of India, is considering hybrid CBDC architecture where some layers of the CBDC technology stack could be on the centralised system and the remaining be on distributed networks (RBI 2022).

11.5. Concluding Observations

The burgeoning digitisation has revolutionised the Indian banking system, but has also brought many cyber security related challenges. In order to stay ahead in the era of dynamic threat landscape, banks need to adopt emerging technologies such as Artificial Intelligence, Machine Learning and Blockchain. This chapter describes the potential of these technologies in the area of cyber security. It highlights the fact that as the traditional security solutions are inadequate to control modern-day attacks, banks can deploy ML based tools to detect and control such attacks. Supervised ML models use the past events data, where machines can be trained to predict definite outcomes (such as identifying Spam,Phishing email, etc.). However, as attacks are evolving everyday, banks may find it difficult to explicitly describe or 'label' such events where unsupervised learning methods would help them form the groups of normal behaviour of systems and spot the abnormility, if any.

The chapter also explains how blockchain technology can provide several opportunities in building next generation security applications. By constructing extremely robust and reliable records of events, it will allow information sharing by creating networks controlled by none, but verifiable and trusted by everyone. The key feature of decentralisation in blockchain overcomes the problem of single target getting compromised to infiltrate and corrupt entire systems and hence blockchain may be one of the most efficient technologies for mitigating cyber risks in the days to come.

However, these technologies can also be potentially exploited by miscreants. A smart hacker may launch an attack on organisation using ML techniques or he/she may exploit some loophole surrounding blockchain system. As cryptocurrency is the most popular application of blockchain, the discussion on blockchain-attacks always revolves around crypto heists. However, the possibility of similar attacks on other blockchain applications cannot be ruled out. Hence, banks need to remain vigilant when they deploy blockchain in areas like trade finance, cross border remittance, etc. Though it is extremely difficult to hack the core application, there may be weaknesses outside the blockchain that create opportunities for attackers and hence banks cannot afford to have false sense of security just because they are using blockchain based applications.

Thus, banks, in their cyber risk management framework need to include guidelines for early identification and handling of risks in adopting emerging technologies. A risk-based approach would help banks in deciding proper controls in early stage of adoption of AI or blockchain and ensure that these technologies are successfully integrated into the business.

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Advancing Digital Financial Inclusion by Leveraging Business Correspondent Model

Policies and Strategies

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12

12.1. Introduction

In the long run inclusive development of nations alone can be sustained. Therefore, every nation is in pursuit of achieving inclusive and distributed economic development. Enabling access, affordability and quality of financial services to underprivileged and marginalized communities stands as the most pivotal aspect in fostering inclusive development. While banking and other financial services are being offered by formal institutions like commercial banks, Development Financial Institutions (DFIs), insurance companies and so on their reach is limited to centres with concentration of population and business. Poor households and rural masses are generally deprived of access and use of formal financial services.

While several steps have been taken by the government, regulators, banks, financial institutions, community organisations and others, still the penetration of financial services among the poor and rural population remains very low. The major reason for this is the high cost of delivering the services and low availability of the services within affordable reach across the country. Other factors are lack of education and lack of awareness about financial services among the unbanked and underbanked population. Yet another factor is the high cost of availing the services because of the need for providing documentary proof for identity, address, income, etc. by the customers and longer time involved in the process. To overcome these limitations on the part of the service providers (supply side) and the customers (demand side), agency banking model has been used in many countries.

The agents were widely used by banks for facilitating banking transactions even three decades ago. Financial inclusion initiative in Medak district of the erstwhile undivided Andhra Pradesh was a collaborative effort between FINO, ICICI Bank, and State Bank of India (SBI). FINO acted as the service provider, while ICICI Bank and SBI were the partner banks. This was the first major experiment of agent banking for financial inclusion in India. The objective of the initiative was to provide access to basic financial services to the unbanked and underbanked population in the district. Under this initiative, FINO set up mobile banking units in the district, which provided a range of services such as account opening, cash deposits and withdrawals, and remittance services. Customers were also provided with smart cards, which served as their account number and identity proof. The initiative was implemented with the support of local NGOs and self-help groups, which helped in mobilizing customers and creating awareness about the benefits of formal banking services. The initiative proved to be successful, with a large number of previously unbanked individuals opening bank accounts and availing of financial services. It also helped in promoting financial literacy and created a savings culture among the population. The triumph of the endeavour paved the way for its emulation in various other regions of the nation, serving as a significant catalyst in advancing the cause of financial inclusion in India.

Admittedly, wider policy directions on agent banking could be seen after 2005. January 2006, the Reserve Bank of India (RBI) issued guidelines for banks that authorized them to enlist Business Correspondents (BCs) for dispensing financial and banking services, a notable milestone in elevating the accessibility of banking services in India. The regulatory framework for the BC model has since been continuously improved to ensure that consumer protection is not compromised while expanding the reach of banking services. This has been achieved through a gradual process of honing the regulatory framework, which has facilitated the adoption of BCs as a channel for delivering financial services to previously unbanked and underbanked sections of the population. As a result, the BC model has emerged as an important tool for promoting financial inclusion in the country.

Later, the agents were provided with information and commination technology (ICT) devices – "micro banking technology" to deliver the services which led to substantial enhancement in access to services and reduction in the cost of services. In India, the agents used by banks are called Business Correspondents (BCs). The business correspondents are of different kinds like individuals, Non-Government Organisations (NGOs), Micro Finance Institutions (MFIs), Community Organisations, etc. Corporate BCs (for profit institutions, like Non-Banking Finance Companies (NBFCs) too are engaged in delivering financial services. Of late, digital technology is being used extensively for delivery of financial and non-financial services to the poor and those living in villages and in remote locations.

Nonetheless, there is a need for doing lot more to broaden and deepen financial inclusion. Given this backdrop this chapter makes an attempt to review the lacunae in the existing models, recent technological developments and global best practices with an intention to suggest policy measures and strategies to achieve greater financial inclusion.

The remaining part of the chapter is organised into nine sections. The second section examines the challenges that hinder the achievement of financial inclusion. The third section focuses on advances in digital technology and how it has become a crucial enabler for reaching the unbanked and underbanked populations. The forth section discusses the BC Banking Model and its successful implementation in various countries worldwide. The fifth section looks at the policy and operational models adopted in India, which has helped to promote financial inclusion in the country. The sixth section assesses the progress and impact of the BC Banking Model in India. The seventh section examines the current challenges that the BC Banking Model faces and the need to address them to further promote financial inclusion. The eighth section highlights strategies to leverage the BC Banking Model for financial inclusion. Finally, the chapter concludes with a summary of the key findings and recommendations for future action.

12.2. Challenges in Achieving Financial Inclusion

The often repeated issues that hindered delivery of financial and other services to the poor and the people living in rural areas were:

- Last mile connectivity: Transportation network and communication network were not available or not sufficient in villages and remote locations apart from not having branches of banks and financial institutions.
- Lack of education: People not having basic literacy and particularly not having knowledge of English too were impediments for delivering/availing financial services offered by financial institutions.
- Lack of awareness: Financial institutions offered a gamut of financial services that could greatly benefit the underprivileged masses, but the lack of awareness regarding these services meant that a significant portion of the population remained oblivious to their potential advantages.
- High cost of delivery: Due to the smaller volume of transactions the cost of delivering services was very high and the business with the poor was not viable for the financial institutions.

- High cost of availing the services: Cost of financial transactions for the poor was very high due to the fact that they had to travel and another major cost was foregone wages.
- Lack of convenience: Business hours of formal financial institutions coincide with the work hours of people and hence are not convenient for the poor to do banking transactions using the traditional channels. Moreover, the need for filling up application forms for availing the services made it difficult for them to avail the services.

12.3. Advances in Digital Technologies – The Enabler

Alternative model that would help overcome the abovementioned challenges must be less expensive and convenient to use, close to the clients and should be trusted by the users. Digitalization of products, services and processes provide the most effective alternative that remove the constraints of both the service providers and the clients. India, has come a long way in this direction and the various initiatives of the government and other organisations are:

- 2009 : The Unique Identification Authority of India (UIDAI), established by the Indian Government, came into existence with the aim of providing unique identification numbers to all residents of the country.
- Telecom companies introduced 3G technology that enabled use of smart phones.
- 2010 : First Aadhar card with unique identification number was issued by the UIDAI.
- 2011: National Payments Corporation of India (NPCI) launched Aadhar Payments Bridge and Aadhar enabled Payment Services (AePS) to enable direct benefit transfer (DBT). This transformed the delivery of government incentives and subsidies to the poor. It enabled delivery of services to the target beneficiaries efficiently and also it helped remove pilferages and frauds. It also made the people realise the need to have a bank account.
- Android based Smart Phones and App gain popularity with increase in smart phone users.
- 2012: eKYC launched by UIDAI, Airtel launched India's first 4G Telecom network that efficiently uses voice and wireless broadband data through mobile phones.
- 2015: Controller of Certifying Authorities (CCA) launched eSign allowing Aadhar card holders to digitally sign documents.
- In the same year, Ministry of Electronics and Information Technology (MeitY) launched Digi Locker[1].
- India Stack: Another major digital infrastructure that acts as the foundation for digital ecosystem and has enabled adoption of digital technology for delivering financial services. The three pillars of India Stack are:
    - Identity – India's national identity programme centred on Aadhar. More than 1.31 billion Indians (95 percent) possess Aadhar Card.
    - Interoperability – Store and transfer money with or without a bank account. Unified Payment Interface (UPS) enables for retail payments across customers and institutions.
    - Data Governance – Data Empowerment and Protection Architecture (DEPA)[2]. Secure consent based data

1. Under the aegis of the Digital India campaign, the Ministry of Electronics and Information Technology (MeitY), Government of India, launched DigiLocker, an online service aimed at digitizing essential documents and certificates such as academic mark sheets, driving licenses, and vehicle registration, which can be accessed in a secure digital format from the original issuers of the said certificates, by every Aadhaar holder via a cloud-based account. (Source: https://en.wikipedia.org/wiki/DigiLocker).
2. The Data Empowerment and Protection Architecture (DEPA) is a pioneering framework for data-sharing, based on user consent that seeks to empower individuals and promote greater privacy and security of their data. (for more details: https://thedigitalfifth.com/how-is-data-empowerment-and-protection-architecture-transforming-indias-financial-landscape/).

sharing network – Account Aggravators[3] (AAs)

- Open Networks: Yet another recent development is the creation of Open Credit Enablement Network (OCEN) which will level the business of lending banks and other lending institutions and will enable customers to avail credit at competitive terms.
- 2016: The Unified Payments Interface (UPI) was introduced by the National Payments Corporation of India (NPCI) as an innovative payment system, which facilitated seamless and instant transactions between different bank accounts, using a single mobile application.
- 2021: Reserve Bank of India (RBI) launched Account Aggregator (AA) framework. This will enable fetching information about customers that are available with multiple institutions like banks, insurance companies, credit information bureaus, income tax department, pension funds and so on such that loan decisions can be made quickly, seamlessly and at minimal cost.
- 2021-22: Account Aggregator (AA) framework and licenses awarded which will make digital lending significantly streamlined and bring down the cost of paperwork, thereby leading to reduction in loan ticket size that are viable for banks and NBFCs.
- 2022: Open Network for Digital Commerce (ONDC) launched as pilot. This will extend commerce to hyper-local merchants with direct connect to consumers through "Buyer Apps" and merchants will also have direct connect with customers through "Seller App" with entire eco-system integrated through Open API.

3. With its ability to enable individuals to safely and seamlessly share financial information across multiple regulated institutions in the network, the Account Aggregator (AA) system has the potential to revolutionize the way people access and manage their financial data, expand the customer base for lenders and fintech companies, and empower millions of consumers with greater control and ownership of their financial records.

- Airtel & Jio launched 5G Telecom networks with rapid expansion in over 300 cities. WhatsApp crosses 500 million monthly active users, an indicator of number of active smart phones with mobile data enabled.
- Central Bank Digital Currency (CBDC) pilot launched in select geographies by the RBI.

Table 12.1 provides statistics on digital payments in India during December 2022.

12.4. BC Banking Model: Global Experience

Siedek (2008) has studied the correspondent banking model in Brazil and has reported that retail vendors, lottery outlets and post offices were used by banks as agents for delivering variety of services including payments, deposits, withdrawals, and money transfers. Equipped with a range of tools including PoS card readers, barcode scanners, and personal computers, these agents were able to efficiently facilitate transactions and provide a seamless experience to their customers. The agents processed an estimated $1 billion worth of transactions in 2005 and opened 12 million current accounts in three years.

Experience of the Democratic Republic of Congo (DRC): DRC is one of the least banked countries in the world. In 2017, just around 17 percent of the adults in the country had bank accounts compared to the average of 54 percent in developing countries. Cull, et al (2017) have studied the agent banking model of FINCA Congo[4]. FINCA Congo launched its agent banking in 2012 and as of 2017 around 65 percent of its transactions were through the agents. The agents are small business owners who are provided with a PoS device and necessary training. The paper reports that population density, commercial development, and education of the agents are three major factors that determine volume of transactions. Another factor that enables higher volume of transactions is monitoring the agents by the financial institution.

4. FINCA Congo is a subsidiary of FINCA, an international microfinance institution having presence in more than 23 nations.

TABLE 12.1

Transactions of Various NPCI Products During December 2022

NPCI Products	*Volume (Million)*	*Value (Rs Billion)*	*Average Daily Volume (Million)*	*Average Daily Value (Rs Billion)*
UPI	7828.90	12819.71	252.55	413.54
Immediate Payment Service (IMPS)	485.84	4865.52	15.67	156.95
AePS - Bhim Aadhaar Pay	1.27	4.46	0.04	0.14
AePS - Cash Withdrawal	93.45	254.84	3.01	8.22
AePS - Fund Transfer	0.03	0.21	0.00	0.01
NACH* – ABPS3†	115.77	206.70	3.73	6.67
NACH – Credit	151.58	1574.35	4.89	50.79
NACH – Debit	119.86	1157.37	3.87	37.33
BBPS	99.68	169.10	3.22	5.45

Source: National Payments Corporation of India.

Notes: *: National Automated Clearing House; †: Aadhaar Payments Bridge System.

Kenya: M-Pesa, launched by Safaricom[5], is a classic example of how mobile phones can be used to deliver financial services, starting with 'person to person' (P2P) and 'person to merchant' (P2M) payments and gradually expanding to include credit, savings, and overdraft-like facilities, through partnerships with the banking sector. The platform's innovative offerings, such as M-Shwari, a mobile-operated bank account that provides interest-earning savings and digital credit, and Fuliza, an overdraft facility for completing merchant transactions, have transformed the way Kenyans access and manage their finances, with one-third of mobile owners estimated to have borrowed from their phone (Ceyla, et al, 2020).

Tanzania: In recent years, mobile financial services have gained significant traction in Tanzania, with innovative offerings like M-Pawa, launched in 2014 by Vodacom[6] in partnership with the Commercial Bank of Africa, providing savings and loans to over 5 million customers, and ACRE Africa's crop, livestock, and index insurance products catering to the needs of smallholder farmers in Tanzania, Kenya, and Rwanda. As of 2017, the number of customers using its services had surpassed 5 million, with an average of 350,000 micro-loans being issued each month, marking a significant achievement for the platform. Additionally, FINCA Microfinance Bank Tanzania's partnership with Halotel[7] has led to the launch of HaloYako, a mobile savings product, further expanding the range of financial services available to the Tanzanian people (Ceyla, et al, 2020).

Kshetriya Gramin Financial Services (KGFS), India acts as agents of banks, insurance companies, pension funds, and mutual funds and offers wide range of services to its rural clients. The platform provides a diverse range of financial products and services, including but not limited to Money Market Mutual Fund, Remittance, Jewel Loan, Joint Liability Group Loan, Emergency Loan, Enterprise Working Capital Loan, Enterprise Term Loan, Education Loan, Livestock Loan, Housing Loan, Pension, Gold Investment, Personal Accident Insurance, Term Life Insurance, Shopkeeper's Policy, and Livestock Insurance (Bindu, et al (2012).

12.5. Policy and Operational Models of BC Model in India

Policy Contours of BC Model

In an effort to promote financial inclusion among the underprivileged sections of society, the Government of India and the Reserve Bank of India have implemented various policy

5. A leading telecom company in Kenya

6. A leading telecom and financial services provider in Tanzania

7. A leading telecom company in Tanzania.

measures, including the introduction of Business Correspondents (BCs) by banks to provide banking and financial services.

The first policy direction for the suitability of BC model was initiated by the Ministry of Finance, Government of India during 2005-06 Union Budget (Ministry of Finance, 2005). The government requested the RBI to "examine the issue of allowing banks to adopt the agency model by using the infrastructure of civil society organisations, rural kiosks and village knowledge centres, to provide credit support to rural and farm sectors". Further, the government also requested to examine the role of microfinance finance institutions (MFIs) as 'banking agents' to "provide the transactional services to low income households and small informal businesses from the commercial banks" (Ministry of Finance, 2005). Accordingly, the RBI constituted an Internal Group in 2005, under the Chairmanship of H R Khan to "Examine Issues Relating to Rural Credit and Microfinance". The committee proposed a working model for BCs covering scope of activities, types of correspondents, risk management, Standards for Due Diligence, Compensation Package, Monitoring & Capacity Building, Grievance Redressal Mechanism, etc. The committee also prescribed the role and functions of BCs as "Pass Through" Agents for providing financial services including the disbursement of small value credit, recovery of principal and interest, and the sale of various insurance, mutual fund, and pension products.

As per the recommendations of H R Khan Committee (RBI, 2005), RBI issued the notification for the banks on January 25, 2006 on financial inclusion by "extension of banking services - use of Business Facilitators (BF) and Business Correspondents (BCs)". In this policy direction, RBI has specified the "eligible entities and scope of activities, payment of commission/ fees for engagement of BF/BC, other terms and conditions for engagement of business facilitators and correspondents, redressal of grievances in regard to services rendered by BF/ BC and compliance with know your customer (KYC) norms".

To decentralise the Electronic Benefit Transfer (EBT) for the benefit of larger population of the country a framework for government-to-person (G2P) payments through banks and BCs was recommended by the Committee on Suggesting a Framework for Electronic Benefit Transfer (RBI, 2008). The digitization of G2P payments was put through a pilot test by various state administrations. With the EBT project, BC and agent networks were extended to isolated rural areas.

In response to the 2009 working group's (chairmanship of Vijaya Bhaskar) recommendations, RBI further expanded the scope of BCs and permitted non-bank entities to act as BCs, leading to increased outreach of banking services to previously unbanked areas (RBI, 2009). The committee has recommended the following measures: (i) the bank shall have sufficient understanding and appreciation of BC model for deepening of financial inclusion, (ii) banks shall enable effective cash management for the agents, (iii) financial education and customer protection, (iv) enough care on financial viability of BC model, (v) banks adequately ensure and mitigate various risks emerging through the agent banking (vi) Banks shall give utmost importance for capacity building of BC agents and (vii) bank shall give priority for expansion of BC model in north eastern region.

The "Committee on Comprehensive Financial Services for Small Businesses and Low Income Households"— 2014, (chairman, Nachiket Mor) recommended for (i) allowing the Non-Deposit taking Non-Banking Financial Companies (ND-NBFCs) to act as 'agent of the banks', (ii) allowing high quality "White Label BCs" for the optimal utilization of BC infrastructure across banks for deeper geographical reach and (iii) creating the National Banks with Agents – "using the agents for different types of banking business with the objective of greater reach without any capital commitment whose operational cost structures are significantly lower than that of a bank branch".

The committee chaired by Deepak Mohanty (2015) on "Medium Term Path on Financial Inclusion", emphasised that the "banks need to

integrate the BC model into their business strategy and with help from technology can develop a low-cost, reliable, last mile delivery channel that could win the trust of the common person". To attain these goals, the committee had made several recommendations to strengthen the BC model – (i) fixed locations for the BC outlets/customer service points (CSP) for gaining the trust and confidence of the customers, (ii) base/link branches of banks shall monitor the BC agents for effective management and to bridge the trust among the users, (iii) skill and knowledge gap of the BC agents are required to be addressed through training and capacity building along with certification of learning. It will enable the credit and related banking services with business viability.

The "National Strategy for Financial Inclusion" (NSFI) – 2019-2024 has deliberated various strategies to sustain the financial inclusion through the BC model and considered it as an integral part of financial inclusion strategy. The report has highlighted various action points to strengthen the BC model through policy interventions in "customer protection, providing suitable products, increasing financial awareness, having a proactive oversight over the activities of the agents and sustainability of the agent/BC network, etc.," (RBI, 2020). Further, the NSFI deliberated on importance of BC registry for tracking the agent's service record and certification to ensure the quality standards for the operation of agent model. To maximise the benefits of agent banking model for providing a "basic bouquet of financial services", NSFI advised the banks to "endeavour for capacity building of their BCs, so that they can be utilised for delivery of a wider range of financial products".

Operational Models of Agent Banking

RBI defines (RBI, 2009) the BC agents as "the retail agents engaged by banks for providing banking services at locations other than a bank branch/ATM[8]. Basically, BCs enable a bank to expand its outreach and offer limited range of banking services at low cost, as setting up a brick and mortar branch may not be viable in all cases".

The regulatory guideline has defined BC Agent Point as "Banking Outlet" (BO) with the following conditions:

- It is a Fixed Point service delivery unit
- Agent "carries out services of acceptance of deposits, encashment of cheques/ cash-withdrawal or lending of money, that is provided for minimum four hours per day and 5 days in a week", else it is called "Part Time Banking Outlet"
- "It carries uniform signage of bank and has authorisation from it with contact details of controlling authorities i.e. BC Agent and linked branch contacts".
- Has complaint escalation mechanism—typically linked branch contact and/or centralised contact of sponsor bank.

On top of this, Bank needs to have:

- Supervision of BO through off-site/on-site monitoring
- Ensure uninterrupted service at BO
- Timely redressal of customer grievances
- Ensure display of working hours of BO

There are two broad categories of BC operational models in India, (i) Banks directly recruiting/engaging the agents for extending the banking services and (ii) Banks engaging Corporates as BC network managers (BCNM), and further, the corporates engage the agents for delivering banking services. As a corporate BC, RBI has permitted to use the service of NGOs, Self-Help Groups (SHGs), Microfinance Institutions (MFIs), and other civil society organisations to extend the financial inclusion service with the help of agent banking model or multiple Customer Service points (CSPs) or Bank Mitras (the Micro or Nano level entrepreneurs). When providing banking services outside of a bank branch or an ATM, the CSPs serve as the retail banking business units. The BC agents play a crucial role in fostering financial inclusion because they are able to provide a wide range of banking services at an reasonable cost and time.

8. Automated Teller Machine (ATM).

TABLE 12.2

Progress of Pradhan Mantri Jan-Dhan Yojana as on March 2023 (Figures in Crore)

Bank Categories	*Number of Beneficiaries at Rural/ Semi-Urban Bank Branches*	*Number of Beneficiaries at Urban Metro Bank Branches*	*Number of Rural and Urban Female Beneficiaries*	*Number of Total Beneficiaries*	*Deposits in Accounts*	*Number of Rupay Debit Cards issued to Beneficiaries*
Public Sector Banks	23.92	14.23	21.04	38.15	152061.00	28.30
Regional Rural Banks	7.77	1.27	5.21	9.03	37938.22	3.44
Private Sector Banks	0.70	0.68	0.74	1.38	5475.32	1.13
Total	32.39	16.18	27.00	48.56	195474.54	32.88

Source: https://pmjdy.gov.in/account

12.6. Progress and Impact of BC Banking Model in India

The Reserve Bank of India has introduced the "Financial Inclusion Plans" (FIPs) in 2010 for "banks to adopt a planned and structured approach towards financial inclusion" (RBI, 2021).

The BC model got scaled up as a result of the government's Pradhan Mantri Jan Dhan Yojana[9] (PMJDY), 2014. After the launch of PMJDY, the BC agents were called as "Bank Mitra" (bank friend). The licencing of Small Finance Banks (SFBs) and Payment Banks (PBs) in 2014 has given more emphasis for the use of BC agents in their business models and hence, the number of operational BC agents in the country has increased.

Table 12.2 presents major achievements of PMJDY program in India.

During this period, Aadhaar and mobile proliferation brought, what is termed as JAM Jan Dhan, Aadhaar and Mobile) Trinity that revolutionised the way banking looked at Identity (KYC) as well as cash transactions at BC point using Aadhaar Enabled Payment System (AePS). . Today bulk of BC Agents use mobile app for BC Banking using API (Application Programming Interface) provided by banks. Many banks today call it "Banking as a Service API. This shifted BC Banking technology development from banks to Fintech who used the API to offer AePs, eKYC, domestic money transfer (DMT) and other BC Banking services on mobile app.

Table 12.3 presents the progress made by the BC model in India during 2012 to 2022. The number of BC agent increased from 147,027 to 35,13,777 with a CAGR of 37.35 percent. The volume of ICT transaction through BCs has increased from 155.87 million to 2853.3 million and the value of transactions has increased from 97.09 million to 9052.52 billion during 2012 to 2022.

Over the years, the MFIs (NGOs and NBFCs) as BCNM have played significant role in digital financial inclusion. The overall BC loan Portfolio of MFIs was Rs 24,908 crores as of March 2021, an increase of 20 percent over 2020.

Of late, BCs were allowed to deliver credit to the poor and some statistics regarding the volume of credit delivered by the BCs during 2017 to 2021 are presented in Figure 12.1. The amount of credit delivered by the BCs has grown tremendously during these five years period.

12.7. Current Challenges for BC Model

Currently, the BC industry in India is facing following challenges:

a. *Limited Number of Services:* Not all services are offered by all banks through BCs and while a BC can offer services of one bank only due to exclusivity provision as per regulatory guidelines. Each Sponsor Bank has very different strategic intent of using BC services which are at times at variance to what customers demand in a particular geography.

9. The Pradhan Mantri Jan Dhan Yojana (PMJDY) is a government-led initiative aimed at promoting financial inclusion by providing affordable access to banking services such as savings and deposit accounts, remittance, credit, insurance, and pension, with the flexibility of opening an account at any bank branch, BC, or Bank Mitra outlet.

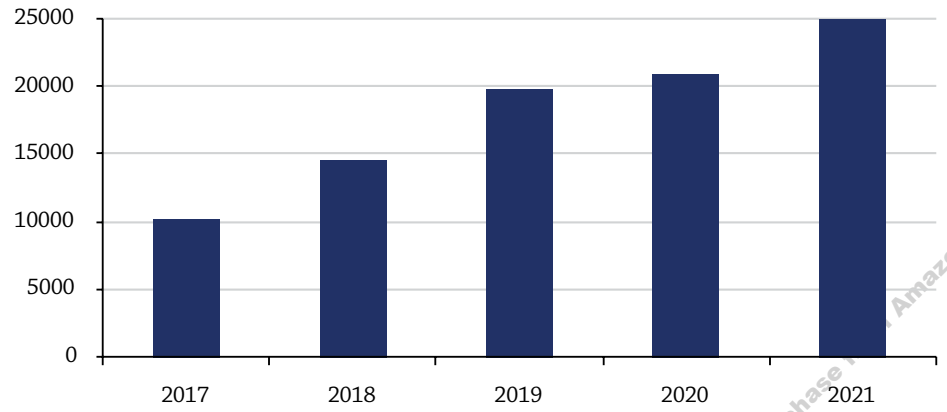
TABLE 12.3

Progress of BC Model in India

Particulars		*2012*	*2013*	*2014*	*2015*	*2016*	*2017*	*2018*	*2019*	*2020*	*2021*	*2022*
Banking Outlets in villages > 2000 – BCs		--	--	--	90877	98958	105402	100802	130687	149106	850406	1892462
Banking Outlets in villages < 2000 – BCs		--	--	--	408713	432271	438070	414515	410442	392069	340019	326008
Total BC Outlets in Villages		141136	221341	337678	504142	531229	543472	515317	541129	541175	1190425	2218470
Total BC Outlets in Urban Areas		5891	27143	60730	96847	102552	102865	142959	447170	635046	426754	1295307
Total BC Outlets		1,47,027	2,48,484	3,98,408	6,00,989	6,33,781	6,46,337	6,58,276	9,88,299	11,76,221	16,17,179	35,13,777
BSBDA- through BCs	Volume (Million)	57.3	81.27	116.9	187.8	231	280	289	319.5	338.8	379.6	401.5
	Value (Rs in Billion)	10.54	18.22	39	74.6	164	285	391	531.95	725.81	876.23	1074.15
ICT A/Cs-BC-Transaction	Volume (Million)	155.87	/250.46	326.6	477	827	1159	1489	2101.9	3231.8	3055.1	2853.3
	Value (Rs in Billion)	97.09	233.88	524.4	859.8	1687	2652	4292	5913.47	8706.43	8497.71	9052.52

Source: RBI, "Report on Trend and Progress of Banking in India" for various years.

FIGURE 12.1
Growth in BC Loan Portfolio



Source: The Bharat Microfinance Report, 2021.

b. *Banking Infrastructure Availability:* At times the network of banks or connectivity to NPCI faces issues which adversely affects availability of services at BC Agent level, as only one sponsor bank is allowed. Further, there is no back-up or BC sponsor bank permitted yet.

c. *Liquidity:* BC Agents need daily liquidity for Cash-in/Cash-out/Money Transfer/ BBPS transactions. Sponsor banks do not provide liquidity support as the extent regulations do not permit this.

d. *Cybercrime:* Presently, if a small cybercrime transaction lands in BC Settlement Account through multiple hops, the law enforcement authority will freeze the entire settlement bank account of Corporate BC leading to bringing the services of all its agents to standstill.

e. *BC Certification:* Over 75 percent of BC Agents are cash-in/cash-out/money transfer agents (also called "Payments or Transaction BCs") and have other lines of business. However, due to these BC Agents financial inclusion has spread deep and wide in sub-urban and rural India. It has also led to the success of PMJDY. These agents can be compared to Merchants with PoS/mPoS terminals where payment transactions take place. These BC Agents may not go to certification centres to give BC Certification test as due to their regular/fixed business operations.

f. *Grievance Redressal:* Currently there is no centralised Grievance Redressal mechanism available except for AePS (Aadhaar Enabled Payments System) transactions for both customers and BC Agents. There are no defined service level agreements (SLAs) for redressal of complaints leading to dissatisfaction and in-turn BC Agents becoming inactive.

g. *TDS:* This is a serious issue stemming from the fact that section 194(N) of Income Tax Act provides for tax at 2 percent (5 percent in case of BC Agents without IT returns) of cash withdrawal amount and NOT income of BC Agent, once certain threshold of cash withdrawal is reached. The intent of this section was to discourage cash withdrawals. However, due to implementation challenges, this is largely not applied by banks especially in rural areas, where bank branch penetration is very low for many banks and when in most scenarios, a BC Agent (CSP) for Bank-A has to transact with a nearby bank branch of Bank-B for depositing/ withdrawal of cash for BC business.

h. *GST:* This issue is mainly due to two reasons. First, banks do not get 100percent GST credit on fee income and second, only banks are allowed to charge on value of services in the entire value chain, leading to 27percent + effective GST for BC services. BC services, be it urban or rural,

are specifically targeting low income customers and this GST is a huge burden.

12.8. Strategies to Leverage BC Banking for Financial Inclusion

During the last few years the BC agent network has grown very strong especially because of the role played by the corporate BCs. Technology can be used to leverage this network in tandem with the following strategic measures:

For Increasing Access to Financial Services

a. Promote CBDC as replacement of physical cash in BC channel. This will provide convenience to customers with smartphones and would reduce the transaction cost.

b. The introduction of micro ATMs with regional language support is expected to boost digital adoption among customers by fostering trust and transparency. By enabling users to interact with the machines in their local language, the micro ATMs can help overcome language barriers and improve accessibility, making banking services more inclusive. This, in turn, is likely to increase the confidence of customers in digital transactions and enhance their overall banking experience.

For Improving Viability of BC Model

a. All sponsor banks should offer a minimum mandated bouquet of services to enhance revenue stream of BC agents

b. Support of ASP (Application Service Provider) model for all main services by connecting Corporate BCs to NPCI directly. This will give relief to banks by reducing the load on their CBS with "Off Us" transactions and improve transaction reliability. This is also called "White Label BC" model.

c. Credit may be offered to BC Agents to manage liquidity and for scaling up their transactions by the sponsor banks and the same may be treated as "Priority Sector Lending". This could be in the form of Overdraft (OD) that can be used to manage daily liquidity issue.

d. Introducing an Account Aggregator at the BC level for lending to micro-enterprises has the potential to improve the feasibility and durability of the BC channel.

e. Permit BCs to act as agents of at least two banks so that the BCs can offer wider range of services.

f. Provide relief from TDS and GST for BC services with appropriate amendments in the taxation laws.

g. Extend ONDC framework to BC agents for both "Assisted Buyer App" and "Seller App" to push digital commerce to rural and semi-urban centres. BCs would be a good trusted point for assisted digital commerce as well as multi-service outlets can use ONDC for buying and also avail MSME credit. Just like Bharat Bill Payments System is enabled for digital bill payments services, ONDC would leverage BC infrastructure for digital commerce with appropriate checks and balances.

For Financial Literacy and Skill Development

Transaction BCs are very similar to that of PoS/UPI merchants. Therefore, certification of Transaction BCs may be done online through the concerned sponsor bank only, to bring awareness in these BCs about basic banking services and Do's and Don'ts.

Regulation and Control

a. Formation of Self-Regulatory Organisation for BCs to bring standardisation of processes and customer grievance redressals.

Customer Protection

Centralised grievance redressal mechanism for both customers and BCs may be set up for SLA based complaint redressal. This will improve confidence and trust on the BC model significantly.

Central registry for black listed BC agents across all services may be established for reduction of fraudulent transactions. This will enable taking targeted action against mischievous BCs and will not affect the business of other agents of corporate BCs.

12.9. Concluding Observations

Financial inclusion is a key driver for inclusive growth and development. Many research studies acknowledge that “access to safe, affordable, and sustainable financial and non-financial services is critical to mitigate the risk and uncertainty (including economic and non-economic shocks) for the poor and venerable sections of the society”. The digital disruptions across the sectors, more specifically in the banking and financial sector witnessed a large-scale transformation in business models and customer experiences. The adoption of the agent banking model for digital financial inclusion has changed the perspectives of banking from “brick and mortar” to doorstep banking with the adoption of ICT innovations. More than 400 corporate BCs and 1.6 million agents are working in India to serve 600,000 villages and remote locations.

Making the BC model viable and sustainable remains a critical challenge even after one and half decades of experience. To address this issue banks may offer a ‘minimum mandated bouquet of financial and non-financial services’ through the agents. The government may provide relief from TDS and GST on BC agent transactions. BCs may also be allowed services like insurance, mutual fund, pension etc of institutions other than that of the sponsoring bank. A self-regulatory organisation of BCs may be started. Further, training and capacity building of the BC agents are very critical and it needs to be looked into beyond the “certification” program to ensure sustainable business through the agents. BC agents may be considered agents of development at the grass-root level and connect the financial sector with real sectors. The government needs to invest (through budgetary allocation) in agent banking infrastructure and capacity building of the agents to leverage the model for the development of the farm sector, micro/informal business, and women empowerment.

To address the gender gaps in financial inclusion and to enable financial literacy among vulnerable sections like, women, female BCAs from self-help group/joint liability groups (SHG/JLG), farmer producer organisations, etc. may be given priority while engaging as “agents”.

The concerted efforts of the government, RBI, banks, various players, and beneficiaries have led to the BC model becoming a stable and integral part of the banking and financial sector in India. Through a step-by-step improvement in the regulatory structure for Business Correspondents, the provision of banking services has been made more accessible, while also ensuring consumer protection is maintained.

The BC agents, who are the face of the banking sector in remote areas, have played a crucial role in ensuring that financial services reach the unbanked and underbanked sections of society. Their efforts have helped promote financial inclusion, enhance financial literacy, and create a more inclusive financial system in the country. Today, the BC model is seen as a success story in India and is being closely studied by other countries looking to replicate its achievements. Nevertheless, a multi-pronged approach wherein the Government, RBI, Banks, and BC Corporates need to work in tandem to make the agent model a profitable and sustainable business for all the stakeholders. Further, addressing the challenges mentioned above would lead to leveraging the model for greater digital financial inclusion.

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Towards a Socio-Behavioural Model of People Risk Management in Banks

B. Ashok | Shomi Srivastava

13

13.1. Introduction

Basel Committee on Banking Supervision defines Operational Risk in the capital framework "as the risk of loss resulting from inadequate or failed internal processes, people and systems or from external events" (BCBS, 2021). People risk is a subset of operational risk in banks. Reserve Bank of India (RBI, 2021) lists internal and external frauds with certain activity examples. Internal fraud is defined thus "Losses due to acts of a type intended to defraud, misappropriate property or circumvent regulations, the law or company policy, excluding diversity/discrimination events, which involves at least one internal party". This definition takes into account the 'loss events' and not the people behind such events. The current discourse on risk management tends to be people-neutral and narrow in its methods. The regulators' emphasise on the importance of developing a 'risk culture' within the organisations. "Organizational culture represents the collective values, beliefs and principles of organizational members" (Ravasi and Schultz, 2006) and Allaire and Firsirotu,1984). No meaningful discussion on organisational culture, therefore, is possible by limiting the explorations to the people-neutral risk models in vogue.

This chapter discusses the socio–behavioural factors influencing culture by drawing from the contemporary scholarship on behavioural drivers of misconduct. The inferences are examined in the context of people risk and culture. The chapter tries to explore the possibilities of developing a conceptual framework informed by the socio-behavioural dynamics of people risk. The chapter thus aims to participate in the ongoing debate on People Risk Management in banks.

13.2. Conduct Risk, Misconduct and People Risk: Understanding the Concepts

BCBS's definition of Operational Risk (*op.cit.*) could be paraphrased, by placing people at its nucleus, as 'the risk of loss resulting from inadequacy and failure of people'. This explanation would, perhaps, help us to place the concept of 'people-risk' in relation to 'misconduct'.

'Conduct Risk' is a new addition to the risk lexicon. It nonetheless leaves an open ended question as to what constitutes, and are the causes of, such a risk. Though there is no universal definition of conduct risk, there appears to be a general consensus to explain it as "any action of a regulated firm *or individual* (emphasis by the authors) that leads to customer detriment or has an adverse effect on market stability or effective competition". The Five Conduct Questions (5CQ) programme of the Financial Conduct Authority (FCA), UK (FCA, 2020) and its periodical reports certainly help us to understand the framework of conduct risk in financial sector at large.

FCA report for 2019-20 on the 5CQ programme (FCA, 2020) *inter alia* speaks about 'Culture, Safety and Leadership' as key priority areas to be addressed. Our discussions on People Risk need to draw considerably from this discourse

as misconduct of individuals constitute or lead to misconduct on the part of the organisations.

Misconduct is not a new concept for organisations. Though the term has not been defined in any of the statutes in India, many courts have cited the definitions from ‘Stroud’s Judicial Dictionary’, ‘Black’s Law Dictionary’ and other texts like ‘P. Ramanatha Aiyar’s Law Lexicon’ etc. The judgment of Allahabad High Court (2007) in Dhirendra Singh Vs The Collector, Kanpur Dehat, for example, cites the following:

“Misconduct’ has been defined in Black’s Law Dictionary, Sixth Edition at page 999 : “A transgression of some established and definite rule of action a forbidden act, a dereliction from duty, unlawful behavior, wilful in character, improper or wrong behavior, its synonyms are misdemeanor, misdeed, misbehavior, delinquency, impropriety, mismanagement, offence, but not negligence or carelessness.””

“P. Ramanatha Aiyar’s Law Lexicon, Reprint Edition 1987 at page 821 defines ‘misconduct’ thus: “The term misconduct implies a wrongful intention, and not a mere error of judgment.””

“...definition of misconduct in Stroud’s Judicial Dictionary .... runs as under:

“Misconduct means, misconduct arising from ill motive; act of negligence, errors of judgment, or innocent mistake, do not constitute such misconduct.””

In personnel management terminology misconduct however has quite a narrow explanation, which could be delineated on these lines: ‘Employee misconduct is a deliberate violation of a written or implied employee policy’.

Both these explanations are *post-facto* approaches where the objective apparently is to address misconduct through a quasi-judicial disciplinary process.

In the context of People Risk management, nonetheless, the whole focus is on addressing possible occurrence of individual misconduct within organisations. Stephanie Chaly et al (2017) offers a clear definition of misconduct from the perspective of risk management, highlighting the “potential for behaviours” that are “illegal, unethical, or contrary to a firm’s stated beliefs, values, policies and procedures.” The focus here shifts from *post-facto* to *ex-ante*. While illegality of misconduct gets, in retrospect, addressed through the disciplinary process, the potential for unethical behaviour continues to be a cause of concern.

Definition of People Risk

Blacker and McConnel (2015) explain people risk as misdeeds or mistakes of people resulting in “considerable financial loss to the firm”. Their reference to people include both internal and external people. Loss, in their view, is not just financial but also includes “loss of corporate reputation” etc., Nevertheless, they offer a crisp definition of People Risk by explicating the BCBS ‘s definition of Operational Risk for the “subset of People Risk as *the risk of loss due to the decisions and non-decisions of people inside and outside of the organisation*”.

Loss events due to the misdeeds of internal people, technically, get identified and recorded as instances of misconduct as per the disciplinary framework within organisations. People-risk and Misconduct Risk are therefore used synonymously in this chapter.

13.3. Socio-behavioural Approach to Misconduct Risk

When it comes to behavioural factors behind People Risk, the focus is on the individual who commits misconduct. What could be the psychological and sociological underpinnings of such a delinquent and unethical behaviour?

Gino (2015) highlights the “gap between the decisions people actually make versus the decisions they believe they should make” and refers to the transdisciplinary approach— from social psychology and philosophy to management and neuroscience — to understand the behaviour of people inconsistent with “their own” ethical standards or moral principles.

Merete Wedell-Wedellsborg (2019) puts forward three psychological dynamics that lead to unethical behaviour, such as: 1. Omnipotence: Characterised by a sense of aggrandisement and entitlement leading to the belief that the “rules of decent behaviour don’t apply to them”. 2. Cultural numbness- Marked by insensitivity towards and gradual acceptance of deviant

behaviour of others. 3. Justified neglect- when people do not question unethical behaviours and seek short-term rewards one could expect by being close to the powers that be.

13.4. Is Individual Unethical Behaviour a Personality Construct?

Could it be that people risk is a personality disposition? When we characterize people risk as a personality construct, it emphasizes that irrespective of circumstances, people with certain types of personality are risky to organizations. The advocates of the view called risky people as "bad apples." A literature review leads us to certain personality traits like self-monitoring, Machiavellianism, psychopathy etc. as risky personality traits. Machiavellianism (Mach) is a personality trait marked by one's drive to gain power by distrusting, manipulating and seeking control over others. (Dahling, Whitaker, & Levy, 2009: 219). Employees high in Mach are "quite disruptive to the effective functioning of organizations" (Dahling et al., 2009; Kessler, Bandelli, Spector, Borman, Nelson, & Penney, 2010; KishGephart, Harrison, & Treviño, 2010; O'Boyle, Forsyth, Banks, & McDaniel, 2012). Extant research for instance observes that empoloyees with Mach trait are "more likely to steal" (Fehr, Samson, & Paulhus, 1992; Harrell & Hartnagel, 1976), "economically opportunistic" "less cooperative (Sakalaki, Richardson, & Thepaut, 2007), and "have lower job satisfaction and higher turnover" (Fehr et al., 1992; Wilson, Near, & Miller, 1996). There are certain meta-analyses establishing the relationship between high Mach traits and "unethical and counterproductive work behaviors" (Kish-Gephart et al., 2010; O'Boyle et al., 2012). At the same, another personality construct known as self-monitoring has been observed as having positive correlation with people risk. As Gangestad and Snyder (2000) observed, expressive control may be an essential component in "illicit social activities" like lying, hidden intentions, or false representation of oneself etc., Further, Rauthmann (2011) found that the "protective and acquisitive aspects of self-monitoring are both related to the so-called Dark Triad— Narcissism, Psychopathy and Machiavellianism (Paulhus & Williams, 2002)—a group of traits that have in common a tendency to manipulate and exploit others for the pursuit of selfish gains". In addition to this, Lee and Ashton (2005) observed the substantial relationship between "Honesty-Humility" and "each of the Dark Triad traits, with correlations ranging from .53 (Machiavellianism) to .72 (psychopathy)". Lee, Ashton, Wiltshire, Bourdage, Visser, and Gallucci (2012) also "demonstrated that the core variance of the Dark Triad variables can be accounted for by low Honesty-Humility".

13.5. Cognition- Motivation Model of Unethical Behavior in Organizations

Fiske and Taylor (1991) introduce the term "cognitive miser" to deal with automaticity in people attribution or behaviour. People don't want to take trouble to collect information, analyse information (to think). Categorization and stereotypic association are relatively automatic, more so than lay people think.

Later, motivation component is also added to explain people misconduct in organizations. According to motivation model, these acts (agent) and attributions (target) are less automatic than people all thought. A variety of motivation can intervene at surprisingly early stages in the process. People are cognitive misers but motivated tacticians, using pragmatic strategies. So people do not have to engage in automatic, implicit prejudice, if sufficiently motivated. People for, impressions by a continuum of processes, moderated by information and motivation.

The cognition- motivation synthesis predicts ordinary people-risk related behaviour. For risky people behaviour in organizations, we must be careful not to equate "cognitive" with inevitable, and motivation with "controllable."

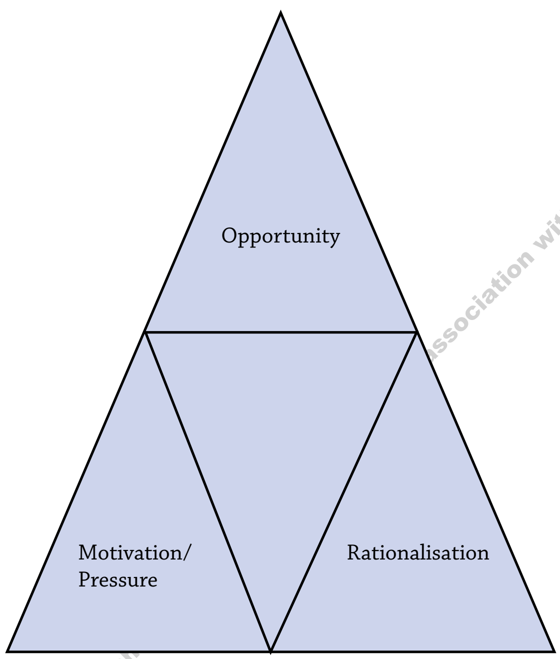
While examining how 'unintended thought and social motivation create casual prejudice' Fiske (2004) argues against blaming unethical behaviour on a few 'bad apples' and asks not to ignore motivation. Unethical behaviour "depends on both motivation and cognition". Gino (2015) discusses situational and social forces as antecedents to unethical behaviour.

13.6. Towards a Socio-behavioural Exegesis of Misconduct

Though the model was put forward seventy years back, Cressey's Hypothesis (1953) which is also known as 'the fraud triangle' continues to be relevant to explain misconduct. Donald Cressey's training in sociology which lead to his interest in criminology and penology gave us this insightful model which enables us to examine fraudulent behaviour by people in organisations. The triangle considers three dimensions of fraudulent behaviour, which are: 1. Motivation or pressure; 2. Opportunity and 3. Rationalisation. (Figure: 13.1.)

FIGURE 13.1

Cressey's Fraud Triangle



Source: Cressey (1953).

Pressure is the motivation behind committing a fraud which could be personal financial pressures, pressure from the superiors or the combined effect of both. The pressure leads to the individual looking for opportunities within the organisation which could be either intended or unintended (Perhaps due to some failed process or systems, we can infer now, in the light of the discussions on Operational Risk). The last element of the triangle, the fraudulent individual trying to rationalise the act of fraud is complex phenomenon with its socio-behavioural roots. The fraudulent person might not consider him or her as a criminal. They would, rather, try to justify the act of fraud by explaining the situation as they perceive it.

The enduring importance of the fraud triangle, however, is not free from criticism. Albrecht (2009) questions its 'one dimensional psychological analysis of the initial perpetrator of fraud'. Donegan and Ganon (2008) challenges its 'limiting effect on fraud research' as the model ignores other factors that contribute to fraud. Trompeter, Carpenter, Desai, Jones and Riley (2013) criticises the model as it assumes single individual acts alone while ignoring group dynamics.

While examining the relevancy of Cressey's hypothesis in the context of financial crimes Huber (2017) observes how the many-sided and interrelated nature of fraud and other financial crimes makes it hard to arrive at an "unidimensional causal theory". Cieslewicz (2012); Morales, Gendron and Guénin-Paracini (2014); and Lokanan (2016) also highlight the need for expanding the fraud model by incorporating social, cultural and economic dimensions. Free, Macintosh and Stein (2007) argue to include organisational factors as well.

Huber (2017) expands the discussion by suggesting certain definite factors of relevance in the context of financial frauds, which are:

- Personal factors including individual psychological factors
- Organisational factors; including internal controls, organisational hierarchy and 'tone at the top'
- Legal/ Regulatory environment of the organisation
- Economic regime
- Political regime
- Cultural dimensions
- Sociological factors

Though it is difficult to find an universal definition of financial crime, statutes like the Financial Services and Markets Act 2000, UK categorises it as (Section 1H):

"any kind of criminal conduct relating to money or to financial services or markets, including any offence involving-

(a) fraud or dishonesty; or

(b) misconduct in, or misuse of information relating to, a financial market; or

(c) handling the proceeds of crime; or

(d) the financing of terrorism;"

Financial crime may not be exactly interchangeable with white collar crime, corporate crime, occupational crime etc., However, it wouldn't be difficult to list a range of criminal offences under the term, like:

- Fraud (Corporate/ Banking/ Insurance/ Securities/ Intellectual Property frauds)
- Cyber crimes
- Money Laundering/ Terrorist Financing etc.
- Bribery/ Corruption
- Market abuse/ insider trading etc., etc.,

Though the discussions on people risk management in banks do acknowledge the importance of understanding the above offences, the current discourse needs to be expanded by including the socio behavioural dynamics of misconduct.

Sudhir Chella Rajan (Rajan, 2020) in his 'deeply informed' book, as Arjun Appadurai rightly observes in its blurb, "brings the sweep of history and transdisciplinary wisdom to bear on corruption, one of the perennial puzzles of human sociality". Rajan (p.73) puts forward the need for a sociological view of corruption "because focusing only on the individual criminal would result in being oblivious to entirely different orders and patterns of corruption."

While addressing the issue of misconduct risk / people risk the being faced by banks in recurring instances of financial crimes like corruption, such a transdisciplinary approach is essential lest we tend to reduce the whole construct to statistically observable variables and respond to it through narrow financial remedies like additional capital charge etc.,

As discussed earlier, the basic unit of consideration in the discussion on people risk being the individual who commit misconduct, it wouldn't be out of place to recall Marx's conception of human nature that "the essence of man is no abstraction inherent in each single individual. In its reality, it is the ensemble of the social relations." (Marx, 1845). In our context, the social relations within organisations need to be analysed and understood to make sense of the abstraction inherent in individual misconduct.

13.7. Social and Interpersonal Dynamics of Unethical Behaviour and the Role of Organisations

Organizational members are, often, really not aware of being unethical to their organization. Gino & Bazerman (2009) suggested that when people's risky behaviour change slowly or steadily from right to wrong side of the code of conduct, it is difficult to interpret or recognize the risky behaviour of an employee, rather than abrupt swing from conduct to misconduct. Ariely & Jones (2012) suggested that it is a reason- the slow shift- the first dis-honest act is most important to prevent so that it doesn't change from an un-intentional risky behaviour to habitual risky behaviour. There should be a deterrent penalty for the first un-intentional risky behaviour as deterrent penalty goes deep in the mind of employees.

As regards organizational risky behaviour, according to Cialdini, Kallgren, & Reno (1991), social norms play an important role with mediation of social context. People take a clue from others behaviour or actions in relation to their behaviour in organization and in society. Gino et al. (2009) coined a term "contagious effect." Risky behaviour spreads like a contagion.

Empirical evidence have suggested the strong correlation between people-risk (unethical behaviour) and goals (target setting) within the organization (Moore & Gino, 2013). Research indicates that imposing targets on people increased incidents of risky behaviour (Schweitzer, Ordonex, & Douma, 2004; Shah, Friedman, & Krugnanski, 2002).

Williams (2020) emphasises on the role of organisational culture by observing that "illicit and unethical behavior is rarely the result of an isolated 'bad apple.' It's more often the symptom of a rotten culture. And rotten cultures don't appear overnight—nor for that matter do positive, inclusive ones, where people feel empowered and accountable to upholding the values of the organization. Culture is created—intentionally or otherwise—by the structures, incentives, and behavioural norms that shape our working lives."

When it comes to culture, Williams (2020, p.3) encourages "everyone to look beyond their own lens of expertise." He acknowledges that the "Fed couldn't do its work without the deep knowledge of economists, lawyers, and statisticians." At the same time he concludes that "the solutions to challenges related to a firm's culture are unlikely to be found if we keep our focus narrowly trained on our own specialties. We have so much to learn from experts in psychology, ethics, and management."

FIGURE 13.2

IRM's Risk Culture Framework

Source: IRM (2012).

Institute of Risk Management (IRM, 2012) illustrates multiple interactions that lead to risk culture in organisations. The framework explains that "at the lowest level, each individual's personal predisposition to risk contributes to their ethical stance, how they behave and make decisions. Group behaviours and the underlying organisational culture also influence risk culture." (Figure: 13.2)

While the framework attempts to simplify the interactions and the interventions one could think of in respect of them, it also makes it clear how complex it would be to develop risk culture in organisations.

13.8. FSB Toolkit

The tool kit for firms and supervisors for 'Strengthening Governance Framework to Mitigate Misconduct Risk' (FSB, 2018) brought out by Financial Stability Board (UK) is of immense conceptual and practical importance in the context our discussions on People Risk Management.

The toolkit, though not envisaged as a recommendation for any particular approach, needs to be discussed in detail, especially since the body of work was used by us to seek empirical responses from a number of middle to senior level bankers in India.

The toolkit addresses three broad themes, which are:

1. Mitigating cultural drivers of misconduct; (Tools 1 to 7)
2. Strengthening individual responsibility and accountability (Tools 8 to 12); and
3. Addressing the rolling bad apples phenomenon (Tools 13 to 19).

Under each of the themes, the 'tools' are offered for 'Firms' as well as 'National Authorities', indicating clearly that firm level interventions should also be supported by national authorities to develop meaningful misconduct risk mitigation strategies.

The following Tables (Tables 13.1 to 13.3) list all of the 19 tools under the three themes.

While explaining the cultural drivers of misconduct, FSB document (p.8) lists the "influential elements of culture" as follows:

- "The leadership of a firm, which sets the organisation's direction and the tone from the top and thus, through role modelling, influences the behaviour of staff;"

TABLE 13.1

Tools for Mitigating Cultural Drivers of Misconduct

Theme/Tools	*"Mitigating cultural drivers of misconduct"*
	"Firms"
"Tool-1"	"Senior leadership of the firm articulate desired cultural features that mitigate the risk of misconduct."
"Tool-2"	"Identify significant cultural drivers of misconduct by reviewing a broad set of information and using multidisciplinary techniques."
"Tool-3"	"Act to shift behavioural norms to mitigate cultural drivers of misconduct"
	"National Authorities"
"Tool-4"	"Build a supervisory programme focused on culture to mitigate the risk of misconduct."
"Tool-5"	"Use a risk-based approach to prioritise for review the firms or groups of firms that display significant cultural drivers of misconduct."
"Tool-6"	"Use a broad range of information and techniques to assess the cultural drivers of misconduct at firms."
"Tool-7"	"Engage firms' leadership with respect to observations on culture and misconduct."

TABLE 13.2

Tools for Strengthening Individual Responsibility and Accountability

Theme/ Tools	*"Strengthening individual responsibility and accountability"*
	"Firms and/or National Authorities"
"Tool-8"	"Identify key responsibilities, including mitigation of the risk of misconduct, and assign them."
"Tool-9"	"Hold individuals accountable"
"Tool-10"	"Assess the suitability of individuals assigned key responsibilities."
	"National Authorities"
"Tool-11"	"Develop and monitor a responsibility and accountability framework."
"Tool-12"	"Coordinate with other authorities"

TABLE 13.3

Tools for Addressing the Rolling Bad Apples Phenomenon

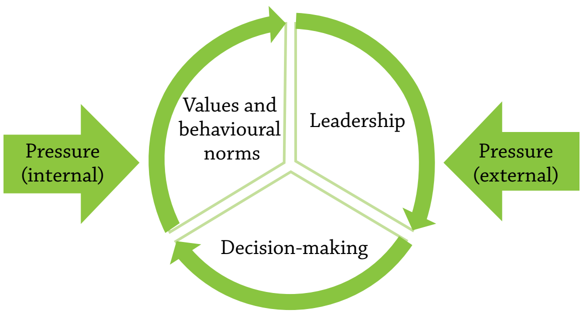
Theme/Tools	*Addressing the rolling bad apples phenomenon*
	Firms
"Tool-13"	"Communicate conduct expectations early and consistently in recruitment and hiring processes."
"Tool-14"	"Enhance interviewing techniques."
"Tool-15"	"Leverage multiple sources of available information before hiring."
"Tool-16"	"Reassess employee conduct regularly."
"Tool-17"	"Conduct "exit reviews""
	"National Authorities"
"Tool-18"	"Supervise firms' practices for screening prospective employees and monitoring current employees."
"Tool-19"	"Promote compliance with legal or regulatory requirements regarding conduct-related information about applicable employees, where these exist."

- “The decision-making process, including how decisions are made, challenged and communicated;” and
- “The values and behavioural norms of the firm, which collectively reflect and support the firm’s purpose and its activities.”

“Pressures that contribute to the occurrence of misconduct” influencing Risk Culture are given in Figure 13.3.

FIGURE 13.3

Elements of Culture (FSB, 2018)



Further to the above model, FSB document tabulates the key cultural drivers of misconduct as under (Table13. 4):

13.9. Perception Analysis – Qualitative Responses from Bank Executives

An exploratory survey in conversational mode through semi structured one-to-one interviews among a number of bank executives, primarily from the Public Sector Banks in India. The firm level tools (Upto Tool No.17) and the Key Cultural Drivers of Misconduct as elucidated in the FSB document were used for the exploratory survey. The target group were bank executives from Scale –IV (Chief Manager) and above, up to the level of GMs and CGMs. Given the sensitive nature of the issues being discussed and the obvious reluctance from the target group to put their views in black and white by way of responding to a questionnaire, we employed

TABLE 13.4

Key Cultural Drivers of Misconduct

Leadership	*Decision-making*	*Values and behavioural norms*
• “Lack of accountability for misconduct” • “Lack of attention, skills and knowledge regarding misconduct risk” • “Domineering leadership style” • “Mismatch between leaders’ words and actions (e.g. not leading by example)” • ““Tone from the middle” inconsistent with the tone from the top” • “Mindset/ambition that does not take account of all relevant stakeholders, including customers, markets and society” • “Failure to resolve staff engagement issues” • “Lack of will to cooperate or to share information”	• “Failure to resolve competing priorities” • “Lack of challenge and debate” • “Confusion regarding strategy or risk appetite” • ‘Weak connections between leadership levels” • “Poor communication” • “Decision-making dominated by the business lines” • “Lack of diversity and inclusion, resulting in “groupthink””	• “Normalisation of misconduct” • “Lack of psychological safety within the firm” • “Reluctance to accept bad news • Limited adverse consequences for misconduct” • “Ineffective identification of, and response to, errors” • “Lack of transparency upwards”

the one-on-one interview method for our analysis. The process was spread over almost a year and the qualitative responses from about 120 bank executives were obtained. The interviews were exclusively based on the firm level tools suggested by FSB and the key cultural drivers identified in the tool kit.

Our inferences based on inductive reasoning drawn from the exploratory conversations are tabulated below (Table 13.5A and 13.5B)

TABLE 13.5 A

Survey Results and Inference: Firm Level Tool Kit

Theme/ Tools	*"Mitigating cultural drivers of misconduct"*	*Whether identified as relevant/ important in their organisational context*	*Specific and significant observations*	*Inductive inferences of the authors*
"Tool-1"	"Senior leadership of the firm articulate desired cultural features that mitigate the risk of misconduct."	Identified by majority of interviewees as extremely important.	----	The senior level respondents were observed to be more in favour of this. They however were not sure as to how this could be achieved.
"Tool-2"	"Identify significant cultural drivers of misconduct by reviewing a broad set of information and using multidisciplinary techniques."	Most of the interviewees did not respond.	Not clear about the idea. May be relevant for Risk Management function.	May be a reflection of the organisational knowledge/capabilities, which tend to treat the issues of people and culture as secondary.
"Tool-3"	"Act to shift behavioural norms to mitigate cultural drivers of misconduct"	Very important.	Banks need to communicate behavioural norms, which are quite different from the employee code of conduct. Behavioural expectations must be positively worded.	Though the importance of this tool has been universally identified, the respondents were quite clear about the absence of any such 'behavioural expectations' document within their organisations.
	"Strengthening individual responsibility and accountability"			
"Tool-8"	Identify key responsibilities, including mitigation of the risk of misconduct, and assign them.	Very important.	KRAs need to be redesigned.	The specifics of the tools need to be discussed and understood better.
"Tool-9"	"Hold individuals accountable"	Extremely relevant and important	The term 'accountability' has a negative connotation in banks.	The negativity attached to the term 'accountability' appears to be universal among the respondents. This needs to be addressed in right earnest by the top leadership.
"Tool-10"	"Assess the suitability of individuals assigned key responsibilities."	Highly important	----	The respondents by and large are sceptical about the practical application of the idea. It appears that the job-family concept existing in the banks needs to be re-visited.
	"Addressing the rolling bad apples phenomenon"			

Theme/ Tools	*"Mitigating cultural drivers of misconduct"*	*Whether identified as relevant/ important in their organisation-al context*	*Specific and significant observations*	*Inductive inferences of the authors*
"Tool-13"	"Communicate conduct expectations early and consistently in recruitment and hiring processes."	Important.	The recruitment process of PSBs (through IBPS) does not currently enable this.	Highlights the need for shifting the existing generic recruitment to a more skill based talent hiring process.
"Tool-14"	"Enhance interviewing techniques."	Important	-- Do --	Supplements the inference on Tool-13.
"Tool-15"	"Leverage multiple sources of available information before hiring."	Important	Not possible with the current system of recruitment	-- do --
"Tool-16"	"Reassess employee conduct regularly."	Very important	Need to move away from the conventional appraisal system.	Highlights the need for re-visiting the existing PMS and HR policy of banks in the context of business strategy, risk & talent.
"Tool-17"	"Conduct "exit reviews""	Important. It is already in practice through Exit Interviews	May be the Exit Review formats need to be revised to capture relevant information	Supplements the inference on Tool-16.

TABLE 13.5 B

Survey Results and Inference: Key Cultural Drivers of Misconduct

	Leadership	*Whether identified as relevant/ important in their organisational context*	*Specific and significant observations*	*Inductive inferences of the authors*
	"Lack of accountability for misconduct"	Not significant/ relevant	----	The existing system of Disciplinary Action within the organisations and the vigilance oversight through CVOs ensure accountability and address misconduct
	"Lack of attention, skills and knowledge regarding misconduct risk"	Relevant	----	People risk management as a strategic imperative needs to be embedded in all aspects of business
	"Domineering leadership style"	Extremely important.	Many people have landed in trouble because of this.	This view has been universally spread across most of the respondents. The issue of having 'bullying bosses' need to be seriously looked into by the top management. Introduction of Behavioural Expectations as discussed under Tool-3 is relevant here as well.
	"Mismatch between leaders' words and actions (e.g. not leading by example) "	Relevant	----	Supplements above inference
	"Tone from the middle" inconsistent with the tone from the top	Very important.	----	Supplements above inference
	"Mindset/ambition that does not take account of all relevant stakeholders, including customers, markets and society"	Extremely relevant and important	People by and large are not oriented towards this.	Supplements above inference

	Leadership	*Whether identified as relevant/ important in their organisational context*	*Specific and significant observations*	*Inductive inferences of the authors*
	"Failure to resolve staff engagement issues"	Highly important	----	Supplements above inference
	"Lack of will to cooperate or to share information"	Not significant	----	Supplements above inference
	Decision-making			
	"Failure to resolve competing priorities"	No significant response	-- Do --	Supplements above inference
	"Lack of challenge and debate"	Important	Leaders need to be open minded to listen to other perspectives.	Supplements above inference
	"Confusion regarding strategy or risk appetite"	No significant response Important	Not clear	Supplements above inference
	"Weak connections between leadership levels"	No significant response	----	Introduction of Behavioural Expectations as discussed under Tool-3 is relevant here as well.
	"Poor communication"	No significant response	----	Supplements above inference
	"Decision-making dominated by the business lines"	Important	----	Business lines and Talent/ HR are perceived to be working in silos. This however could be a shared opinion, rather than an objective information. Nonetheless, communication channels between all verticals need to be strengthened.
	"Lack of diversity and inclusion, resulting in "groupthink""	No significant response	----	As above
	Values and behavioural norms			
	"Normalisation of misconduct"	No significant response	----	May not be applicable in most of the cases. The presence of vigilance oversight, as already discussed, is quite significant in Indian PSBs.
	"Lack of psychological safety within the firm"	No significant response	---	This needs to be addressed on top priority by HR and Top management. Quite a lot of anecdotal evidences are being cited by bank officers.
	"Reluctance to accept bad news"	Important	This appears to be the case with non-acceptance of fresh slippages (NPAs)	Quite universal response. Top management needs to address this effectively.
	"Limited adverse consequences for misconduct"	Not relevant	----	Already discussed.
	"Ineffective identification of, and response to, errors"	No significant response	----	As above
	"Lack of transparency upwards"	No significant response	----	Introduction of Behavioural Expectations as discussed under Tool-3 is relevant here as well.

General Comments on the Inferences from the Analysis

While most the interviewees could identify almost all of the tools as relevant at their firm level, the cultural drivers other than Leadership (Decision Making and Values & Behavioural Norms) did not receive significant responses. While it would be difficult to arrive at definite conclusions from such lack of responses, it appears clear that the concepts of people risk management, organisational culture and risk culture need to be disseminated more effectively within banks.

The critical observations on the inadequacy of the current hiring process of PSBs appear to be quite significant in the context of effective people-risk mitigation strategies.

Though the term 'bullying' was not used by any of the respondents, the observation on 'Domineering Leadership Style' as having adverse effects on the careers of many appears to be quite significant. This needs to be addressed by leaders in all seriousness in the interest of organisational and risk culture.

As regards tool no:2, which suggests to "identify significant cultural drivers of misconduct by reviewing a broad set of information and using multidisciplinary techniques" the interviewees were quite agnostic in their responses, so much so that a number of responses expressed their inability to comprehend the same. Similar response has been observed in all levels of leadership hierarchy who were interviewed by us.

We have observed defensiveness in public responses while conducting the survey. This calls for a more structured and designed research to elicit more objective responses.

13.10. Towards a Conceptual Framework for People-risk Analytics

Williams (2020, p.3) exhorts bankers and regulators "to learn from experts in psychology, ethics, and management" lest the "solutions to challenges related to a firm's culture", most likely, won't be found. Fiske (2004) concludes her examination of knowledge in the context of ethical behaviour thus:

"It's too soon to take practical lessons from neuroscience, except to admit that cognition, affect, and motivation do not separate in any tidy fashion, and all must be addressed in any interventions designed to encourage ordinary ethical behaviour. Constructive cognition can result only from the availability of appropriate information, ethical motivation can result from incentives or values, and adaptive affect results from the right combination of each. All these factors are knowable and controllable by policymakers and managers, to encourage more ethical ordinary behaviour."

The key words here are 'knowable and controllable factors' which the policy makers and managers could use to encourage ethical behaviour. Let us try to understand this in the backdrop of the profoundly insightful words of Bertrand Russel quoted by Rajan (p.74) which goes as "what we cannot think we cannot think, therefore we also cannot say what we cannot think". Unless we expand our discourse by drawing from other branches of knowledge, our thoughts would get narrow and we cannot articulate what we cannot think.

The Actor Network Theory (ANT) which has its roots in Science and Technology Studies, in its simplified explanation, posits that 'for any actor to act, many others must act as well'. How the theory has been gaining traction among scholars interested organisational and communication studies is examined by Bencherki (2017). The possibilities of expanding our discussion on the multiple interactions summing up to organisational and risk culture (Figure:2) grow manifold with ANT. Rajan (2020) brilliantly draws from Bruno Latour, the original proponent of ANT, in examining the sociology of corruption.

Inter relatedness of enquiry, therefore, acquires greater significance in developing a conceptual framework for analysing people risk. Ontology, epistemology and methodology as we know offer an all-encompassing perspective on enquiry. The people-neutral discourse on risk management, however, has been driven by methodology which forms only a part of the knowledge continuum.

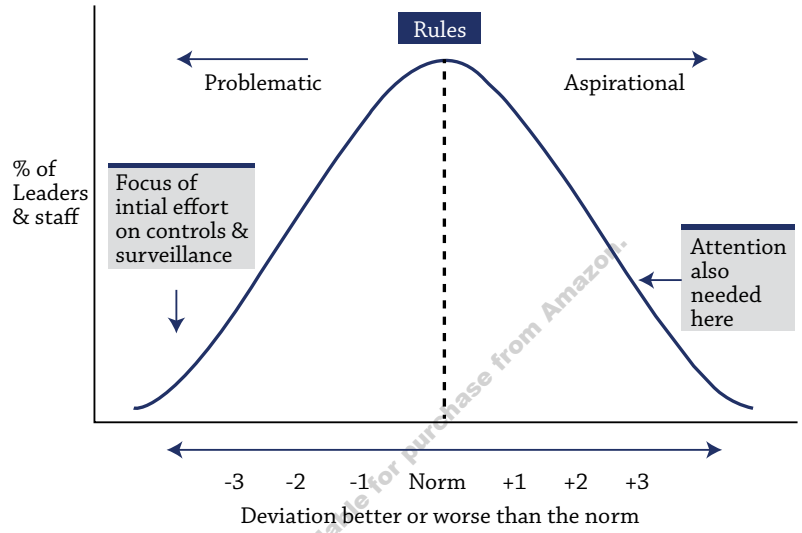
It is quite inspiring to note that some of the models of epistemology like hermeneutics, have been used by scholars to examine financial crimes and ethical issues. Hermeneutics is the study of interpretation, having its roots in exegesis of biblical texts. Hans-Georg Gadamer, the twentieth century German philosopher (1900-2002) developed the idea of philosophical hermeneutics in his 'Truth and Method' (1975). Gadamer speaks about "the impossibility of reducing truth to a set of research methods and the need for people's openness to dialogue with others" (Hovey, Rodriguez and Jordan, 2020). Gadamer's dialogical hermeneutics could be explained in the light of the examination of dialogics by Fairhurst and Putnam (2004). They explain it thus: "A dialogic perspective focuses on both "little d" and "big D" discourse, 'd'centering on language-in-use and 'D' spotlighting enduring systems of thought, feeling, and action that structure the way organizational members make sense of and act in their social worlds".

Howsoever abstract the theories of hermeneutics and dialogic hermeneutics appear to be, solid explorations rooted in real instances of financial crimes and fraud have been made by many scholars. Dion (2019), for example, explores the 'Gadamerian perspective on financial crimes'. Similarly, Hawkins and Schedlitzki (2019) conduct a "dialogic exploration of ethics in leadership through an ethno-narrative re-reading of the Enron case".

Dion (op. cit) explores the hermeneutics of silence and cites the "narrative strategy of silence" or the "no-wordness attitude" of business organisations. "The code of ethics" of Credit Suisse (Switzerland), for instance, though includes provision on "legal compliance", which they even defined it as an "ethical value", does not, however, "seem to grasp the nature of human values and their ethical import. Moreover, its code of ethics does not address insider trading, fraud, money laundering and corruption". The ramifications of this 'narrative strategy of silence' could be observed in the series of scandals involving the bank in the recent years.

The narrative strategy of silence or no-wordness attitude could as well be examined in the back drop of the 'behavioural curve' developed by FCA (2019). "The normal distribution curve depicts the range of individual behaviour from good to poor. The shape of the curve and the mid-point line are presented for discussion purposes only. The curve is not intended to reflect any observations on the actual proportions of people on one side of the curve or the other, ie we do not suggest that only 50% of people exhibit good behaviour. The dotted vertical line represents generally accepted rules such as social mores, corporate policies & procedures, the FCA handbook and company law" (Figure: 13.4).

FIGURE 13.4
Behaviour Curve (FCA, 2019)



The narrative strategy of silence could be used to do a what if analysis of the behaviour curve. If the dotted vertical curve in the middle is not there? i.e. How would the curve look like had there been a no-wordness attitude within the organisation in respect of code of ethics or behavioural expectations? In all probability, the shape we would get might be like an amorphous cloud, which would lead us nowhere.

13.11. Conclusion

As discussed under the inferences from the exploratory survey conducted based on the FSB tool kit, most the interviewees identified almost all of the tools as relevant at their firm level. The

cultural drivers other than Leadership (Decision Making and Values & Behavioural Norms), however, did not receive significant responses. Does it not point to the organisational ineffectiveness in disseminating the concepts of people risk management, organisational culture and risk culture effectively within banks?

The critical view on the current hiring process of PSBs, in our opinion, is reminiscent of the elephant in the room metaphor. Doesn't it?

The identification of 'Domineering Leadership Style' as having adverse effects on the careers of many appears to be quite significant. This needs to be addressed by leaders in all seriousness in the interest of organisational and risk culture.

The history of misconduct, perhaps, may date many millennia back and not much may have changed ever since, except that the complexities of misconduct/ fraud have increased manifold. As Gadamer spoke about "the impossibility of reducing truth to a set of research methods", if we want to get an all-encompassing grasp on the ever increasing complexities of people risk, we need to develop an analytical model which draws from sociology, psychology, philosophy, epistemology, neuro sciences, system theory etc to supplement the existing statistical models.

Scope for Future Research

The exploratory survey based on the FSB tool kit could be conducted in a more methodical using structured data points including factors relevant in the context of banks in India. Methodologies like Participant Observation (PO) could be considered while designing the research so that limitations of receiving defensive responses corresponding to normative behaviour could be overcome.

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14

Impact of Business Strategies on Bank Profitability

Kaushik Mukerjee | Arindam Bandyopadhyay

14.1. Introduction

In the current context, profitability of banks has been a major challenge owing to increasing competition, rising Non-Performing Assets (NPAs) and the impact of unforeseen factors. This has resulted in the increased focus on business strategies that have an impact on bank profitability. One of the major factors behind the erosion of profits is the unmitigated risk appetite of banks. Suitable business models that ensure profitability needs to be adopted by banks. The importance of appropriate strategic decisions has been summed up eloquently by Shri Shaktikanta Das, Governor, Reserve Bank of India as follows:

"Business models and business strategies of individual entities should be conscious choices that are adopted following a robust strategic discussion in the Board, after considering all relevant aspects. Businesses should avoid aggressive short-term reward seeking culture, without regard for the build-up of excessive risks in the balance sheet. The common characteristics of some inappropriate business models or strategies that are observed include:

- Inappropriate funding structure;
- Building asset liability mismatches which are highly risky and not sustainable;
- Unrealistic strategic assumptions, particularly excessive optimism about capabilities, growth opportunities and market trends which may lead to poor strategic decisions that imperil business model viability; and
- Over-focus on business considerations with neglect of risk, control and compliance systems." (Das, S., 2022).

The major aim of this chapter is to guide the banking industry to articulate appropriate business strategies to enhance profitability in the given changing macroeconomic and business conditions. It captures the key points from the Speeches of RBI/Literature, regulatory changes on priority sector developments, MSME, agri businesses, BC models, which could be explored to strengthen lines of businesses that could be tapped to enhance profitability. There is a need to galvanize the strengths of evolving technology tools like Artificial Intelligence, machine learning, next gen tools have been referred as future guiding tools to better the operating ecosystem.

14.2. Macroeconomic Trends and Impact on Bank Strategies

What is an effective business strategy? According to Michael Porter, mere operational performance may not lead to a great strategy. The goal of strategy is to deliver greater value to customers at a lower cost which will lead to superior profitability. The logic cited by Porter is about providing greater value whereby a firm can charge premium prices while better operational efficiency results in reduced costs. Interestingly, the role of purpose in strategy has been well acknowledged by researchers (Malnight et al., 2019). Firms have long been encouraged to build purpose into what they do. Instead of

aggressively fighting for market share through price competition, the best firms use a sense of purpose to redefine the playing field. A purpose driven approach enables firms to rethink their business models, respond to current trends by creating more holistic value propositions, and imbibe purpose across the various departments of the firm. A comparison in the practices of the most profitable banks reveals several interesting approaches in their business strategies.

The recent pandemic crisis caused by Covid 19 has prompted firms (and banks) to be in a state of urgency for quickly deploying innovative solutions to solve emerging issues and challenges. The profitable banks have leveraged dynamic capabilities to create innovative products, collaborate with partners to build better business models and adopt latest technological tools to get ahead of the competition. Dynamic capabilities and strategy have a symbiotic relationship. This has been explained as: "a good strategy has (1) a diagnosis, (2) a guiding policy, and (3) coherent action. It is clear that this taxonomy interacts with the three clusters of dynamic capabilities: sensing, seizing and transforming. Sensing contains a strong element of diagnosis which is important to strategy. Seizing needs to be connected to both a guiding policy and coherent action. Transforming that protects and enhances value requires a guiding policy and coherent action" (Teece, 2014; p. 341). Banks have realized that they need to proactively manage their balance sheets with respect to profitability in order to ensure their competitiveness. Accordingly, the best performing banks have taken immense efforts in order to sense, seize and transform to ensure sustained profits during volatile and uncertain market conditions. These banks have not taken digitalization as a threat but developed and implemented suitable business strategies to capitalize on digitalization as an opportunity for the bank. This chapter is an attempt to understand the type of tactics adopted by banks of different ownership types to manage risks as well maintain solvency and higher profitability. This will enable us to link strategy with profitability on a risk- return axis. Accordingly, we have examined the changing business environment faced by Indian commercial banks due to digitalization, path of transformation towards higher profitability, effective management of risk through adoption of risk culture, and importance of key decision variables to enhance risk adjusted profitability.

14.3. Digitalization – A Need for New Business Models

Digitalization has been transforming industries and banking has also undergone its impact. The impact of digitalization has resulted in a shift in the business model from a branch-based approach to an omni-channel based approach. Digital lending has been touted as a trillion dollar opportunity by Boston Consulting Group (BCG, 2018). Profitable banks have taken intense efforts at sensing the opportunity presented by increased digitalization and launched innovative digital products to enhance profits. This warrants better market sensing and customer tracking processes that permit them to collect greater and better information about customer requirements, competitor activities, and market movements and opportunities through increased market knowledge and the understanding of underserved customer groups (Arunachalam et al., 2020). Banks have leveraged sensing capabilities for identifying more value-maximizing new product opportunities and thus allocation of resources to the development of appropriate new products. In order to improve profitability, banks are using data analytics to build more intricate customer profiles which helps them to customise need based financial products and services as per the customer's context. The use of digitalisation for seamless delivery of services is helping create customer delight (e.g. pre-approved personal loans available on a single click through online banking platforms). The portfolio analysis of profitable banks shows that the emphasis has shifted from corporate lending to focus on retail and MSME clients.

In order to promote digital products that are delivered with quick turnaround times (e.g. housing loans, vehicle loans, business loans, etc.), banks have been engaged in creating suitable ecosystems. Banks are generating better profits through pioneering competency in Analytics, Artificial Intelligence and Machine

Learning. These advanced technologies are being deployed for better service outcomes and relationship management, real time risk analysis and mitigation and make a positive impact on the bank's strategy. Banks are partnering with a host of firms to gain access to suitable resources. This calls for suitable changes in the routines and rituals to ensure more effective resource allocation processes whereby all ecosystem partners can be served well (Linde et al., 2021).

The rise of frauds in the banking sector in India has been denting the profits of banks and despite stringent measures in terms of audits, the problems have been mounting for banks (RBI, 2016). Therefore, in order to ensure better profitability, the banks have built more effective early warning systems with regard to cybersecurity threats and ensure compliance with the RBI Cyber Security Framework. These banks have taken several measures to build robust fraud detection systems and also roped in their employees in order to step up vigilance measures. Further, these banks have initiated robust routines for off-site monitoring of the transactions that cover all banking transactions for ascertaining any suspicious or dubious transactions. The modus operandi of frauds are studied, and these are documented and stored in an online database for the benefit of the bank's employees to enhance preventive vigilance. Technology has been extensively used in the bank's operations with specific tasks being performed on suitably designed technology platforms. Technology based initiatives have helped profitable banks undertake more effective monitoring of the cases in stressed accounts for ensuring better loan recovery.

The Reserve Bank of India (RBI) regulations lay emphasis on priority sector lending (RBI, 2020). The profitable banks have adopted appropriate business strategies to ensure compliance with the regulations related to priority sector lending keeping in focus the imperative of profitability. In order to target economically disadvantaged customers prudently (with regard to the credit risk), profitable banks have focused on gold loans for secured lending at reasonably attractive interest rates. To ensure good outreach with the communities, banks have built dependable teams of business correspondents and set up customer service points in areas where branches are not viable. The regional language based mobile apps have ensured easy access for rural MSME customers and farmers. Specialized products for dairy farmers, agri-gold loans, advisory services, and online market places for agricultural products have helped to make the right impact in agricultural segment.

14.4. Business Strategy, Digitalization and Profitability Framework

Digitalization has resulted in customers being offered more choices and take more informed decisions while choosing a bank's products which has meant that the traditional transactional customer value propositions are being redefined with multidimensional value propositions. Therefore, banks may need to undergo strategic renewal through digital transformation of business models and undertake a wider range of processes (Warner and Wager, 2019). It needs to be noted that digital transformation is fundamentally not about technology, but about strategy, meaning that senior leadership in the banks needs to focus on business model innovations, structures and processes that optimize customer needs and experiences (Rogers, 2016). The role played by leaders assumes immense importance in order to ensure effective transformation of the bank. Leaders need to adopt a future-oriented approach by explaining the significance of the digital business model's goals, processes, rituals, and metrics that will be important in a digital world (Schoemaker et al., 2018).

The profitable banks have transformed themselves to capitalize on the opportunity presented by digitalization. Some banks have launched smaller, sales-oriented and digital branches (also called e-lobby); Business Banking Branches for catering to MSME advances; and a more cohesive BC Model. Further, profitable banks have transformed in order to enable digitization of the customer journey across asset and liability products segment. The profitable banks have created a meaningful presence on social media. This involves the bank

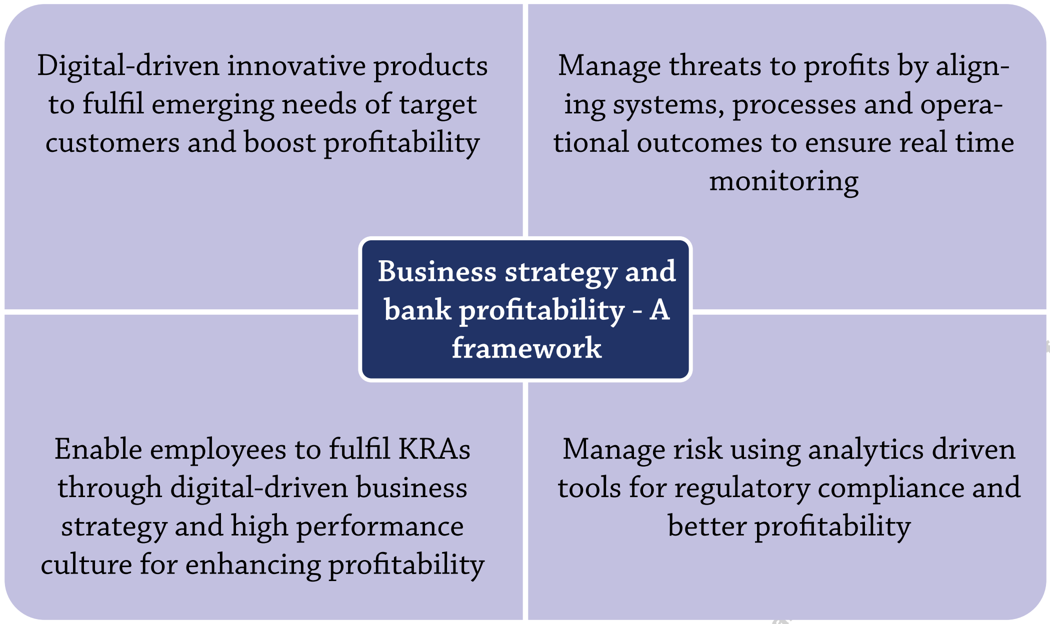
making its official presence felt on all major social media platforms viz. Facebook, Twitter, Instagram, YouTube and LinkedIn. The visitors on these sites may get engaged with the bank's offerings through a digitally assisted dialogue, and participate in online contests, events, etc. The banks can leverage this opportunity to interpret the brand perception among customers and gain competitive intelligence to increase business prospects through social media. Further, profitable banks are assessing the consumer's sentiment with regard to the existing or new products and analysing the expectations of customers in banking products and services. These banks have been engaged in launching targeted digital marketing campaigns on social media handles and for maximum reach on products / services / offers and sign up new customers along with improved search engine visibility and enhanced website traffic. In order to facilitate higher share of the customer's wallet, profitable banks have made e-commerce business tie-ups across hospitality, entertainment and health sectors with key market players. Profitable banks have established internal processes to create 'Customer Service Index' for classifying branches based on the quality of customer service. Technology-enabled approach for opening new accounts in most customer categories quickly and efficiently have been made feasible using image-based processing tools along with Video KYC norms. In order to ensure competitiveness vis-à-vis fintechs, profitable banks are investing in a collaborative approach to create innovative business models, open applications, agile processes and differentiated products to attract, connect, and engage with customers. The term fintech refers to the integration of technology into delivery of financial services to improve the delivery and reach of such products and services.

Digital HR tools have been implemented to make it easy for employees to play their respective roles in transformation of the bank. While traditionally target setting for employees was based on a top-down approach, it is now being done with the help of digital tools using a scientific approach and algorithmic validations. This helps in combining the top-down and bottom-up target setting mechanism thereby ensuring involvement and feedback from all stakeholders in the target setting process. This is illustrated in Figure 1.

Banks must identify data that can enhance or elevate their key performance indicators (KPIs) through machine learning. Banks can analyse the identified data streams and build artificial intelligence systems for better decision making by the leaders. A comprehensive data management plan needs to be put in place to ensure that data is managed as an asset (Kiron and Schrage, 2019). For example, one of the transformations that profitable banks have undertaken successfully is the document management system to facilitate digitalization. Document Management Systems (DMS) have become a part and parcel of banking operations. DMS includes - digitalization of documents for e-office operations, appropriate storage and retrieval systems. The key benefits of DMSs are digitalized document systems with easy management and access for employees as well as greater security and reduced physical storage space. Profitable banks have invested in designing and implementing a digitised process for back office operations which currently employ large manpower for doing routine jobs, so as to release the manpower and to improve the operational efficiency in terms of cost, TAT (Turnaround Time), tracking capabilities and contain operational risk. The monitoring through technology has been extended to Business Correspondents (BCs) as well by profitable banks. A tech-based BC monitoring mobile app is being used for paperless inspection of BCs, geotagging, social audit, real-time MIS of the audit coverage, risk categorization, preventive vigilance and early warning signal generation in case of irregularities at BC points. In order to ensure real time tracking and monitoring of operations, profitable banks have instituted online self-audit by branches and vetting by controllers. Banks like SBI as part of Risk Focused Internal Audit (RFIA), the internal audit department conducts various audits, viz. "Credit Audit, Information Systems Audit, Cyber Security Audit, Home Office Audit / Audit of foreign offices), Concurrent Audit, Foreign Exchange Management Act (FEMA) Audit, Audit of Outsourced Activities of the bank, Expenditure Audit and Compliance Audit" (Source: sbi.co.in).

FIGURE 14.1

Business Strategy and Profitability – A Framework



Source: Authors own illustrations

Digital and technology-based tools help to identify Related Party Transactions and detect diversion of funds. The Cost-to-Income Ratio tool helps manage branch-level changes in product mix and expenditures to maximise profits. The Early Warning System (EWS) is integrated with the centres making outbound calls thus reducing stress in loan accounts. Banks today need to build suitable data through a governance framework with global standards to ensure readiness for imminent laws / regulations. Fairness, Ethics, Accountability & Transparency (FEAT) document and Explainable AI are being adopted to ensure ethical model building. Profitable banks have adopted next-gen capabilities such as Deep Learning, Cloud-Based Services, Prescriptive Analytics, and Real-Time Analytics in order to create models combining risk, activation and spend analysis into a single, holistic model.

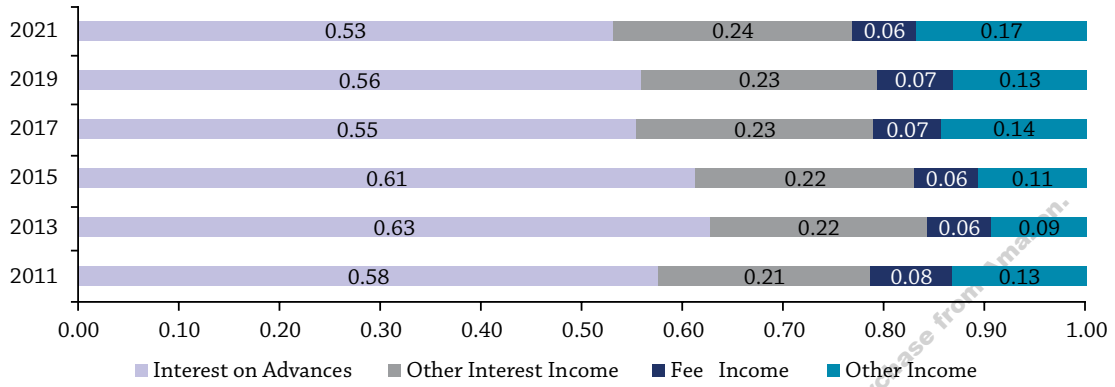
A strategic framework like one presented in the Figure 14.1 enables to structure business thinking and guide businesses as they grow and accomplish their mission. It is equally important to address both risks as well as opportunities to ensure sustainable business.

14.5. Risk Adjustment in Business Strategy-Data Analysis and Profitability Roadmap

Risk adjustment is key for setting good business strategy. This has been recognized by institutions that follow best practices along with a good risk management culture. Business growth strategies need to be linked with risk as banks require to proactively remain responsive to the market expectations to ensure continuous supply of equity capital from shareholders. In a recent speech, the Reserve Bank India Governor, Shri. Shaktikanta Das has urged the Indian commercial banks to remain "watchful of the evolving macroeconomic situation, including global spill overs and take mitigating measures proactively so that the potential impact on their balance sheets is minimized and financial stability risks are contained." (The Week, 2022). It is expected that banks with a more diversified loan book and income stream, and equipped with more advanced digital strategy will be able to keep a positive business outlook. The following section of the chapter investigates the relationship between the changing

FIGURE 14.2

Income Diversification Pattern of Indian Banks



Source: Chart prepared by the authors based on panel dataset of 31 public and private sector banks over the time period of 2011 -2021. The audited financial data was obtained from Ace Equity Database.

patterns of the banks' income sources and their risk adjusted profitability.

The current business strategies of the banks reflect a constant shift in income structure. Interest income is still the most important revenue source in the industry's income structure, but it has been declining in recent years. As can be seen from Figure 14.2, the revenue share of interest on advances has fallen from being 63% in 2013 to 53% in 2021. This demonstrates that non-traditional activity remains a viable option for Indian commercial banks. The subset period analysis is based on a panel dataset of 31 Indian commercial banks (12 public sector, 10 new private and 9 old private banks) over twelve years (2010 to 2021). We have a balanced panel dataset, consisting of 347 observations which are divided into public, new private and old private banks.

Markowitz (1952) first introduced the benefits of diversification in portfolio selection. Later, this was applied to the banking sector. Doumpos (2016) found a positive relation between income diversification and the stability of banks across countries and concluded that banks in less developed economies benefit more from diversification activities than banks in advanced economies. Chiorazzo (2008) observed that income diversification increases risk-adjusted returns (which reduces instability). Hidayat et al (2012) found product diversification increases financial stability for small banks but reduces stability for large banks. In a McKinsey & Co. report, Ganguly et al. (2017) have highlighted the significant benefits of digitalization in banks with respect to customer experience, revenue and cost. The authors argue that a risk function with the support of technology provides better monitoring and control, and facilitates more active regulatory compliance.

The share of non-interest revenue in overall bank revenue is increasing as the banking sector's deregulation and growth into other type of enterprises continues. Following the global financial crisis, research has increasingly focused on the benefits and drawbacks of universal banks' involvement in proprietary trading and other securities market activity. Sanya and Wolfe (2011) study revealed that income diversification assists banks to increase profits and reduce business risks. Rossi et al. (2009) and Lee et al. (2014) also found evidence that bank risks were reduced through revenue diversification and through betterment of bank performance.

The impact of non-interest revenue on the performance of banks, particularly the stability of their overall revenues and profitability,

TABLE 14.1

Risk, Capital and Business Performance Position of Selected Scheduled Commercial Banks in India (Per cent)

Bank	*Year*	*Group*	*Credit Density*	*Credit Growth*	*CD Ratio*	*GNPA*	*NNPA*	*Tier 1*	*ROA*	*ROE*	*RORWA*
Axis	2018	New Pvt	99.18	18.02	98.72	7.38	3.69	13.11	0.07	0.77	0.10
Axis	2019	New Pvt	94.10	12.63	91.99	5.70	2.23	12.70	0.67	7.65	1.06
Axis	2020	New Pvt	91.48	15.06	90.78	5.07	1.63	14.60	0.22	2.44	0.35
Axis	2021	New Pvt	88.93	8.94	89.75	3.94	1.14	16.60	0.75	7.64	1.28
BOB	2018	PSB	99.71	11.65	72.09	12.10	5.40	10.46	-0.26	-4.3	-0.4
BOB	2019	PSB	90.11	10.57	72.75	9.74	3.40	11.55	0.14	2.25	0.2
BOB	2020	PSB	90.08	45.91	72.60	9.49	3.17	10.71	0.09	1.49	0.1
BOB	2021	PSB	88.53	2.36	72.62	8.83	3.08	13.47	0.12	1.98	0.2
Canara	2018	PSB	94.66	11.61	72.80	11.88	7.48	10.30	-0.67	-13.7	-1.13
Canara	2019	PSB	85.10	12.05	71.46	8.83	5.37	9.04	0.08	1.78	0.15
Canara	2020	PSB	87.51	1.00	69.14	8.24	4.23	10.12	-0.28	-6.1	-0.53
Canara	2021	PSB	86.53	47.84	69.14	8.94	3.82	10.18	0.28	6.07	0.49
Federal	2018	Old Pvt	65.84	25.39	83.07	3.00	1.69	14.18	0.71	8.58	1.45
Federal	2019	Old Pvt	62.40	19.86	82.69	2.92	1.48	13.38	0.86	9.96	1.81
Federal	2020	Old Pvt	60.25	13.27	82.00	2.84	1.31	13.29	0.90	10.97	2.05
Federal	2021	Old Pvt	59.70	8.54	78.70	3.41	1.19	14.20	0.85	10.52	2.04
HDFC	2018	New Pvt	122.10	19.57	88.79	1.32	0.43	13.22	1.86	18.43	2.17
HDFC	2019	New Pvt	118.14	24.17	94.22	1.39	0.44	15.78	1.87	17.05	2.17
HDFC	2020	New Pvt	104.38	20.07	91.05	1.43	0.50	17.02	1.90	16.54	2.50
HDFC	2021	New Pvt	99.81	13.57	88.87	1.53	0.58	17.33	1.88	16.50	2.69
IDBI	2018	PSB	127.15	-10.0	69.31	27.95	16.69	7.73	-2.29	-47.0	-3.72
IDBI	2019	PSB	100.68	-14.5	64.61	27.47	10.11	9.13	-4.47	-61.9	-10.14
IDBI	2020	PSB	100.81	-11.5	58.43	27.53	4.19	10.57	-4.13	-42.9	-9.81
IDBI	2021	PSB	100.61	-1.30	55.55	22.37	1.97	13.23	0.48	4.85	1.12
SBI	2018	PSB	76.54	3.33	72.01	10.85	5.69	10.53	-0.12	-2.2	-0.28
SBI	2019	PSB	71.50	13.61	75.73	7.43	2.97	10.78	0.08	1.48	0.19
SBI	2020	PSB	74.27	6.62	72.52	6.07	2.20	11.24	0.45	8.32	1.03
SBI	2021	PSB	73.87	5.32	67.30	4.95	1.48	11.70	0.54	10.13	1.31

Source: Authors' own calculation based on Audited Financial Reports and Basel 3 disclosure of the banks.

has become an emerging topic of interest for researchers in recent years. In this section, we will examine if there is a link between the percentage of non-interest revenue in a bank's overall income and the volatility of its profitability. The goal is to see if the percentage of non-interest revenue in a bank's overall income has a direct impact on its profitability. This way, it may be assessed indirectly if commercial banks' involvement in the investment banking market provides diversification benefits or increases risk for the banks.

Basel 3 regulation stipulates that the performance of banks should be adjusted for risk for a fair assessment. In this context, we have looked at business growth strategies, leverage, asset quality, and credit risk and capital position of selected commercial banks in India. Their key performance parameters are summarized in Table 14.1. It is quite evident that Gross Non-Performing Assets (GNPA) and Net Not Preforming Assets (NNPA) as well as Credit Density (credit risk weighted assets to gross advances) that reflect the embedded credit risk

positions can significantly affect the level of return on equity and return on assets.

Credit Deposit Ratio (CD) represents how much a bank lends out of the deposits it has mobilized. A higher ratio indicates greater liquidity and more dynamic banking activity. The banks' level of risk taking is reflected in GNPA, NNPA and Credit Density Ratio. Higher these ratios, greater is its exposure to credit risk. Moreover, there is an interconnectedness between CD ratio, credit growth, credit density and bank performance strategies. It is prominent from the below table that these business strategies and awareness about business risks varies across banking groups.

Some banks are consciously managing their portfolio risk, leverage and growth targets, and are thus able to successfully maintain positive and stable performance (in terms of ROA and ROE). However, there are banks who have failed to control the risk in their loan portfolios and ultimately end up with higher credit density, lower credit growth (or even negative), higher NPAs, greater loss provisions and hence lower returns. We have also estimated risk adjusted return in terms of Return on Basel 3 Risk Weighted Assets (RORWA) that gives us a better view of their performance on a risk adjusted basis. As evident from the numbers, the risk culture characteristics and the bank's 'attitude' towards the risk culture may differ. Consistent with regulatory expectations, a good risk culture in banks is reflected in higher profitability ratios, bank stability, solvency, low default risk and good governance (Bianchi et al., 2016; Agarwal et al., 2019). The metric return on risk weighted assets (RORWA) is a powerful risk measurement tool that assists banks and financial institutions to evaluate and compare business performance in risk return axis. Accordingly, a bank can evaluate actual performance of its various business segments and ultimately trace the contribution of each segment on the basis of Return on Risk Weighted Assets.

We have further extended this work to investigate bank level performance to identify and assess key strategic variables. For this, we have also assessed how banks' financial performance is influenced by sources of income, and has been captured via the Dynamic Panel GMM estimation method. We have adopted two step difference GMM approach introduced by Arellano and Bond (1991). The functional specification of the model has been given below.

$$\Delta y_{i,t} = \alpha_1 \Delta_{yi,t-1} + \alpha_2 \Delta x_{ki,t} + \Delta \vartheta_{it}$$

Equation 14.1

Where y_{it} represents the dependent variables defined as return on risk weighted assets (RORWA) and x_{it} captures the k regression factors that includes earnings diversification, costs, liquidity and asset quality. The error term is represented by symbol ϑ_{it}. The lagged dependents have been used as instruments. The differenced GMM not only takes care of panel endogeneity but also tackles heterogeneity and autocorrelation issues.

TABLE 14.2

Summary Statistics

Variable	*Observations*	*Mean*	*Standard Deviation*	*Minimum*	*Maximum*
RORWA	344	0.0082	0.02114	-0.10141	0.06337
CASHTA	344	0.0784	0.03196	0.02791	0.24358
LNBUSS	344	14.556	1.41036	10.2234	17.9452
COSTINCR	344	0.5286	0.13928	0.29126	1.4122
NONINT_INTINC	344	0.1852	0.15113	0.04992	1.0476
GNPAR	347	0.0553	0.05562	0.0015	0.2795

Note: RORWA=Return on Risk Weighted Assets (Net Profit/RWA); CAHSTA=Cash to total assets (proxy liquidity position); LNBUSS=Natural log of total business (deposits & advances); CONSTINCR=total cost to total income ratio (reflects management of cost efficiency); NONINT_INTINC=Non interest to interest income (captures income diversification); GNPAR=Gross Non Performing Assets to Gross Advances (captures asset quality or credit risk in business).

Source: Authors' calculation.

Table 14.2 provides summary statistics of key variables used in the multivariate analysis. The multivariate bank performance analysis is based on panel dataset of 21 Indian commercial banks (12 public sector, 10 new private and 9 old private banks) over 12 years (2010 to 2021).

The regression results are presented in Table 14.3. The reported Arellano-Bond Generalized Methods of Moment (GMM) results are two step differenced estimates with one period lag of the dependent variable.

TABLE 14.3

Arellano-Bond Dynamic Panel Data Estimation

Factors	*Dependent: RORWAt*
RORWAt-1	0.1635***
	(5.20)
LNBUSS	-0.006**
	(-3.37)
CASHTA	0.1135***
	(6.01)
COSTINCR	-0.065***
	(-9.13)
NONINT_INTINC	0.0394***
	(15.67)
GNPAR	-0.3270***
	(-30.38)
Constant	0.0010***
	(3.06)
No. of Observations	280
Wald Chi-square (d.f., p-value)	6071.62 (6, 0.00)
AR1 (p-value)	-1.95 (0.05)**
AR2 (p-value)	-0.08 (0.93)
Sargan J-test Chi-square (d.f., p-value)	28.30 (54, 0.998)

Source: The authors' own calculations based on panel data of public and private sector banks in India.

The figures in the parentheses are the estimated z-values. The symbols *** indicate statistical significance at 1 percent or more; ** Represents significance at 1-5 percent.

The variable LNBUSS is the natural log of total business of banks (credit and deposits) and it is a proxy for the bank size factor. In our study, ratio of non-interest income to interest income (NONINT_INTINC) has been used to measure the extent of income diversification in banks. Banks in India are now focusing on non-interest income streams to complement their earnings from traditional interest income activities. The move to digital innovation and new income streams are prominent for new generation private sector banks as well as for some leading public sector banks. It is quite evident from Table 14.3 panel GMM regression results that a greater income diversification through non interest sources can significantly improve banks' risk adjusted profitability. The return on risk weighted assets measures the banks' risk adjusted profitability. However, it is important to mention that core income generating activity of a bank is through lending and hence interest income has direct influence on bank performance. As expected, the higher credit risk of assets represented by GNPA ratio has significant negative impact on the risk adjusted profitability ratio. The higher credit risk increases loss provisions as well as credit risk weighted assets and thereby decreases the banks' risk adjusted profitability. The better liquidity and cost positions as captured by higher cash to assets ratio (CASHTA) and lower cost to income ratio (COSTINCR) positively enhances banks' risk adjusted profitability. The Sargan test confirms the exogeneity and validity of the instruments. The high Wald Chi-Square with a low p-value confirms the good fitness of the model.

14.6. Concluding Observations

The banking sector in India is going through a rapid transformation due to changing business environment as well as technology innovation. Digitalization has become deeply embedded in banking business and strategy. It has become imperative for Indian commercial banks to take a holistic view of the risk factors impacting future performance of the business. It is quite evident that banks can significantly improve their performance through income diversification, better cost management through technology innovation, improving credit risk management framework for better asset management and better liquidity management. Customer Service Index, digital market tools used by some banks is an important highlight for many

to emulate them to steer internal Customer Relationship Management (CRM) operations. Banks need to manage customer information as well as develop strategies for acquiring and retaining the customers. Our panel GMM regression results highlight that greater income diversification and focus on non-interest income can significantly improve the risk adjusted return of the banks. This can be a valuable input for the banks to work out their future strategies. This will also enable banks to manage its business risk effectively and gain market confidence.

Digitalization can be well leveraged for enhancing revenue streams while keeping the proper control over risk. It not only strengthens banks core income generation but also facilities other income (non-interest income) generating activities as well. Digital tools may be suitably designed to offer real-time credit monitoring and enable banks to reduce the unwanted exposures to delinquent borrowers. Further, digitalization can help banks to cross-sell various non-traditional products through third-party tie-ups and thereby augment revenue and profits. In this way, banks can foster better customer loyalty. It is worthwhile to mention that Non-lending activities should not substitute the core function of the bank. Internal Ratings Based models can significantly reduce margining requirements thereby boosting loanable funds and hence possible increase in profits. It is expected that the path of digital innovation will enable the banks to reach out to customers in a better manner, relieve cost pressure, improve regulatory compliance and sharpen risk management techniques.

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15

Revisiting ‘Loan Melas’

Qualitative Study and Analysis of Practice in Credit Marketing

Sarita Bhatnagar | Anjan Roy

15.1. Introduction

Recently, in September 2022, a federation of bank employees voiced their concerns against the marketing events or ‘loan melas’[1] organized by state owned banks to enhance their flow of credit. Such events, they contended, added to the retail non-performing assets as loans were granted without much diligence. Public sector banks pursue social welfare objectives and lend to under-served sectors under government schemes or differentiated lending policies for the development of the nation, which may not be entirely aligned to market based practices of profit oriented bank lending. The practice of ‘loan melas’ is historically rooted and now a part of credit marketing tradition of public sector banks in India.

The use of ‘loan melas’, however, has not been limited to the public sector banks. There have been several instances of private banks organizing such events.[2] However, the ‘loan melas’ as practiced by these banks seem to be quite different than of the former banks. Usually advertised, these events have been mostly used to market loan products, such as for purchase of consumer durables during festive seasons or to grow credit portfolio in new markets. They are designed in a manner to affect sales promotion by offering interest rate discounts, added benefits, insurance covers, etc.

The above differences of viewpoints on ‘loan melas’ between banks begets questions such as: Are these valid practices in credit marketing? Do they have any foundation within the existing theories of credit marketing? The word ‘mela’ in Hindi dialect origins from the word ‘mel’, which means a coming together, while ‘mela’ itself refers to a village fair, or a place where artisans display and sell their wares. It seems that commercial banks expropriated the term to market and sell finance. The phenomenon of ‘loan mela’ is thus interesting but also contentious, partly because of the tentativeness of its positioning within the theory of credit marketing, and partly because of the associated value judgements in regards of its appropriateness as practice.

This chapter looks at ‘loan melas’ as a practice and also as a concept in credit marketing strategy. It examines the occurrence of the practice in its real-life context and also evaluates it as a theoretical construct within the underlying framework of credit marketing theory. It, thereby, makes an attempt to assess the suitability of ‘loan melas’ as a strategy for credit marketing.

A qualitative methodology using techniques of phenomenological analysis (Groenewald, et al., 2004) has been adopted for the study. Phenomenology is a research approach to theorize upon the meaning of human experience through the process of describing the essence of a phenom-

1. https://www.business-standard.com/article/finance/bank-union-opposes-public-sector-banks-loan-melas-on-npa-pile-up-fears-122090500904_1.html
2. https://www.business-standard.com/article/pti-stories/hdfc-bank-to-hold-1-000-grameen-loan-melas-over-next-6-months-119092200433_1.html

enon by exploring it from the perspective of those who have experienced it (Neubauer et al. 2019). Thus, while the study has drawn upon data from various published material, including news articles and commentaries, which have discussed the phenomenon, shared experiences of bankers, as participants in the study, were elicited through structured interviews. Qualitative analysis of the responses obtained was conducted using methodology suggested by Pentland (1999) and Elo et al. (2010) to reach at the underlying meanings and interpretations of the participants about the practice.

In the following section, the phenomenon of 'loan melas' is first discussed as a marketing practice as observed in Indian banking. In section 15.3, the theoretical domain of credit marketing is surveyed to discern the functions served, the challenges and concerns within, and the developments of the related concepts. In section 15.4, the emergence of the construct of 'loan mela' is examined through the phenomenological point of view. Section 15.5 attempts to evaluate the 'loan mela' as a valid strategy for marketing of credit. Section 15.6 concludes.

15.2. History of 'Loan Melas' as Means for Credit Dispensation

The practice of 'loan mela' in Indian banking emerged in the backdrop of commercial banks' increasing involvement in rural lending. Prior to nationalization, banks were reluctant to lend to the farm sector with fears of defaults. Post nationalization, various schemes such as the Differential Rate of Interest (DRI), the Integrated Rural Development Program (IRDP), etc., were introduced to enhance lending to the rural sector. It was in the 1980s that the concept of 'loan mela' was introduced[3] to address existing deficiencies in lending processes particularly to the rural and poorer segments of the society. There was lack of awareness about banking facilities in rural areas where due to absence of formal credit farmers had high dependence on money lenders. Organized in venues called 'shamiana camps', the events elicited the presence of various stakeholders including the senior management of banks and persons of high standing in the local areas. Over the years, the practice of organizing 'loan melas' continued, often with patronage of the ruling political establishment.

In the decade of 1990s, with regulatory changes like liberalization of interest rate, and rising competition from new private sector banks, the purpose of 'loan melas' became broadened. Privatization, growth of information technology and rise of the consumer segment, created demand for retail loans, including the personal and home loans. Led by the private sector banks who started offering these products, public sector banks also realized the potential of these lending avenues. Banks began to conduct 'loan melas' to enhance their customer outreach, educate prospective borrowers and also grow their credit portfolios. 'Loan melas' began to be set up for various segments, such as for farmers for purchase of agriculture equipment, or retail customers for housing loans, auto loans, etc.

In the late 2000s, 'loan melas' began to target the festive spending made by consumers. Most of these were featured by promises of hassle free credit, on the spot processing, pre-approved loans, availability of panel of lawyers, builders, vaastu experts, and automobile dealers, etc. 'Loan melas' also included marketing promotions such as community event participation, property melas, special offers on home loan balance transfer products, and relaxing margin money requirements.

Over the years, concerns over the conduct of 'loan melas' arose as loans granted during such events led to higher levels of retail NPAs. With significant constraints in the recovery process, and incidences of loan waivers, the credit culture became vitiated. Most importantly, such initiatives increasingly became based on top down instructions and done for target fulfilment, instead of being local, regional or branch level initiatives. Constraints of time for organizing the events and funds for promotion and publicity led to lowering of footfalls. More importantly, the conversion of footfalls and loan requests at the 'loan melas', to actual disbursement became lower as customers realized that despite access and easy on-boarding, the price of the loan were high and unaffordable.

3. https://economictimes.indiatimes.com/et50-poojarys-mela-turned-into-a-melee/articleshow/5906880.cms

The practice of 'loan mela', has evolved into a number of forms, depending upon the type of organizing entity (bank, government, businesses, state level bank's committee or SLBC, etc.), their objectives (enhancing welfare, providing access, enlarging portfolio, meeting target, etc.), and geographical factors (rural, urban, etc.). In the context of public and private sector banks, there are certain differences in the approach towards 'loan melas'. For public sector banks, such events are meant to give thrust on priority sector lending and accordingly their focus is on retail, agriculture and MSME sectors. Accordingly, they organize 'loan melas' to fulfil the outreach targets of government schemes like MUDRA, kisan credit cards, etc. On the other hand, private sector banks seem to pursue 'loan melas' for business development, lead generation, and cross selling. Their organization structure characterized by most branch managers not having powers for loan sanctioning may necessitate such initiatives, so that specialist attention be given to accelerate the credit processes. While in the rural areas, the focus is more upon agriculture, SHG or MSME loans, in the urban areas, retail 'loan melas' are more prominent.

Recently in October 2019, a renewed impetus for reviving 'loan melas' by public sector banks in around 400 underbanked districts (later extended to another 200 districts) was initiated by the government, seeking a five-fold increase in the customer base in these areas . Banks were allowed to select the districts to cover and 'shamiana' (ceremonial tent) meetings were planned to be attended by ministers or Member of Parliaments from the region. Contrasting the 'loan melas' of earlier times, these were timed to enable pickup of credit and turn around several sectors, such as automobiles, consumer durables, etc., in the broader economy.[4] The announcement of the 'loan melas', however, elicited concerns from several quarters.[5]

The emerging practice of 'loan melas' indicates to their changed role from being a tool for dispensation of directed lending. Whereas earlier, the objective for 'loan melas' was to enhance credit outreach, today the same has turned towards advertising bank's readiness to lend. The events have increasingly gravitated towards becoming a segment specific marketing strategy Indeed, it is observed that upon announcement of 'loan melas', sales effort gets a boost for certain portfolios at the respective branches.

15.3. Evolution of Practice and Theory in Credit Marketing

Concepts in marketing of bank credit have their antecedents in the emergence of theories in two areas: (i) marketing and (ii) banking and credit (Figure 15.1). Marketing, defined by Kotler and Armstrong (2012) as 'the process by which companies create value for customers', has witnessed several paradigm shifts: from a functional view before 1900, to the dominance of product life cycle in early 1900s, to the selling of products by 1950s, and to marketing as satisfying the needs and wants of the buyer in the 1980s (Keelson, 2012; Golebiewski, 2015). During such course, several concepts came up, such as brand loyalty (Cunningham, 1956), marketing mix (Borden, 1964), 4 Ps: product, price promotion and place (McCarthy, 1960), market share (Kotler, 1967), service quality (Parasuraman et al., 1985), market segmentation and product differentiation (Dickson and Gintner, 1987; Levitt, 1980), relationship marketing (Berry,1983; Sheth and Parvatiyar, 1995), brand equity (Aaker, 1991), etc. There were other recent paradigms of social and holistic marketing, wherein the conflicts between consumer's short term wants and society's long term welfare became addressed (Keelson, 2012). In such sense, marketing as a function became developed from giving a 'push' effect for the seller to creating a 'pull' effect for the buyer. Many of its concepts, such as customer loyalty, customer relationship management, etc., emerged from practice; while others such as customer value became developed from their bases in other disciplines such as economics, sociology, psychology, etc.

4. https://economictimes.indiatimes.com/markets/stocks/news/loan-mela-effect-bank-credit-soars-in-oct-nov/articleshow/73221163.cms?from=mdr

5. https://www.magzter.com/stories/Newspaper/The-Hindu-Business-Line/Loan-Melas-May-Trigger-Fresh-NPA-Crisis

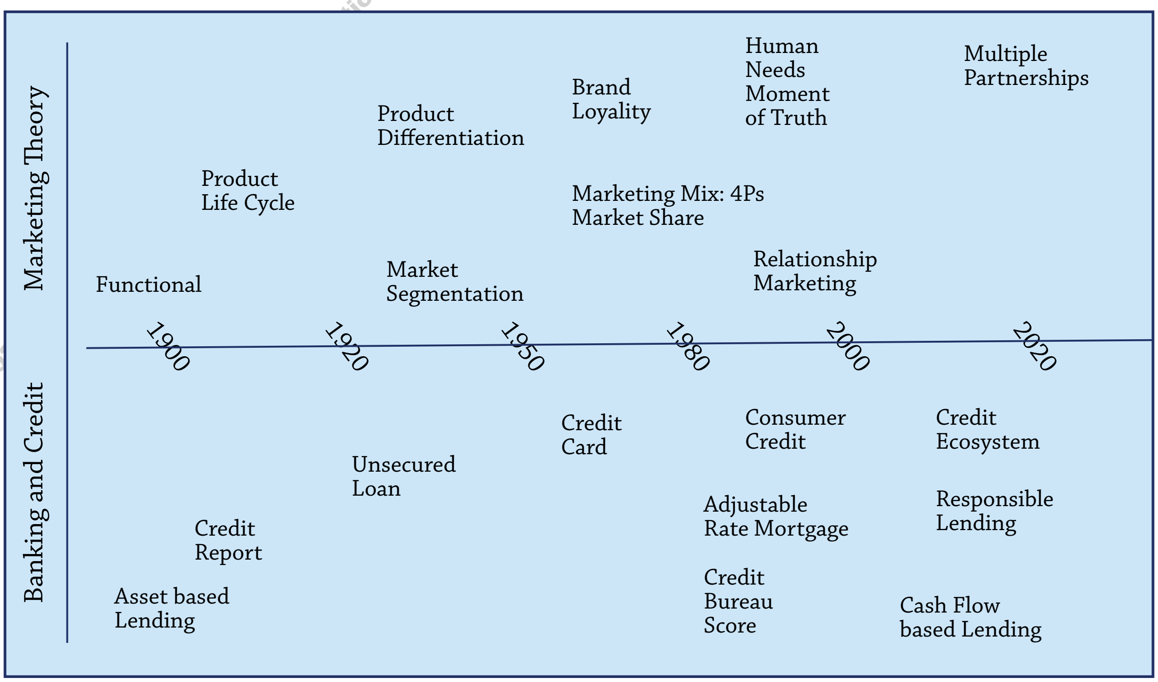
One particular concept that emerged in the area of services marketing and understanding of purchase decision making by customers, has been the idea of 'moment of truth' (MOT). MOT is defined as the moment when a customer first encounters a product or a service in real life (Normann, 1978, 1984; Carlzon, 1987). There are other moments of truth such as the second MOT when the customer has bought and used a product and gained certain experience that may support the purchase decision made earlier (Lofgren, 2005). The third or the ultimate moment of truth is when the customer subscribes to the brand and provides content and goodwill for its support (Moran et al., 2014). A more insightful development, however, has been the zero MOT occurring in the upstream process of decision making, when the customer recognizes the need and begins the search for information to make a future purchase (Lecinski, 2011).

In the area of banking, the dominant theoretical paradigm has been the development of the theory of financial intermediation (Allen and Santomero. 1998; Scholtens and Wensveen, 2000). The function of banks involves taking deposits and creation of credit by lending to firms and households in the presence of transaction costs and asymmetric information. There are challenges and risks in performing the functions of financial intermediation, such as moral hazard, owing to which the banking industry is highly regulated. Accordingly, various regulatory concepts such as fractional reserve, risk capital, etc., have been developed that serve to constrain the banks in regards of their risk taking.

Against such background, the developments in marketing of bank credit have taken place. Credit, as a financial concept, embeds features of product (as an amount of money) as well as service (being available at the time of need). It is, however, not a primary need of the customer but a derivative of various other needs related to fulfilling their life cycle objectives. Loans are not simple products or service transactions between buyers and sellers, but more mutually involved long term relationship that depends

FIGURE 15.1

Developments in Marketing Theory and Banking and Credit Practice



Source: Authors' Construction

on their repeat interaction and bilateral cooperation. The concept is featured by several other dimensions such as interest rate, repayment terms, provisioning of collateral and covenants.

Marketing of credit has traditionally emphasized the development of products leading to new offerings such as revolving credit, adjustable rate mortgages, etc. Loan products have been traditionally marketed for specific end uses such as for purchase of housing, vehicle, working capital, or other assets, under the broad credit process called secured lending (Scott, 1986) or asset based lending. For other types of uses such as for tiding over liquidity problems and smoothening consumption, unsecured lending products such as the personal loan were developed around 1920s (Calder, 1999), while credit cards became available by the late 1950s (Batiz Lazo and Del Angel, 2016). By late 1980s, banks began to pursue relationship lending to address information asymmetry problem while extending lines of credit to borrowers (Greenbaum et al. 1989; Berger and Udell, 1995). For meeting the credit needs of customers whose business model does not provide tangible assets, cash flow based lending evolved, wherein lenders secured the first claim on proceeds from asset liquidations (Ivashina et. al. 2022). Besides, lenders have often used marketing tactics such as teaser rates, relaxation in processing fees, combo offers, zero interest rate loans, buy now pay later loans, etc., to promote the uptake of credit by customers. Lenders also pursue with customers of other lenders to shift their loan account balance in order to grow their portfolio.

With oncoming of new technologies, developments in credit ecosystem began with many actors and agencies coming to play a role, such as loan brokers, peer to peer lenders, account aggregators, credit registries, etc. Besides, lending models for disseminating credit to the under-served customers through creation of self-help or joint liability groups have emerged.

Borrower's decision processes for availing credit are, however, complex wherein situational factors, such as their financial status, as well as their psychological factors come to play a role (Turton et al., 2021). While the former factors can be easily measured by methods of credit scoring, the latter factors usually tend to be ignored. Kamleitner and Kirchler (2007) point out that purchasing goods on credit differ from other purchases, as such transactions may involve making payments for the goods purchased during or after consumption. Accordingly, Kamleitner et al. (2011) have viewed use of credit as a multi-faceted phenomena carrying reflections of the person (or the borrower), the situation (the borrowing need), the cognitive basis (understanding of implications of borrowing) and the social forces (other influencers). They observe credit use as a process that entails phases, such as: (i) before credit acquisition; (ii) at credit acquisition; and (iii) after credit acquisition. The additional aspects to the purchase process are often not envisaged fully.

Bank credit has a principled dimension unto itself. While borrowers are likely to know more about their conditions and idiosyncratic risks than their banks, they may also have limitations in regards of their financial literacy and understanding the implications and obligations arising due to taking out a loan. For such reasons, both access to credit as well as unfettered growth of credit have been of concern in most banking systems. Therefore, while banking regulators in various jurisdictions have taken steps towards credit democratization by relaxation of financial regulations for the underserved sections of the population, they have grappled with concerns over rising over indebtedness and possibility of systemic crisis. The subprime crisis of 2007/08 is a recent example of widespread indebtedness leading to financial crisis across the world.

Competition in credit markets, demand for profit by shareholders, and consumers' desire for immediate gratification, all taken together ensure that banks pursue credit growth at a higher rate. In this context, credit marketing as stimulator of consumption (Filipovic, 2017) has indeed played an important role in the accumulation and over burdening of debt. It has been observed that product specifications such as flexibility of loan terms and conditions are significant for predicting borrower's intentions to acquire future loans (Mbawuni and Nimako, 2015). Kerre et al. (2018) found that in a devel-

oping country like Kenya, marketing practices of banks, represented through the earlier five Ps, but not later two, affect the usage of credit cards amongst their customers.

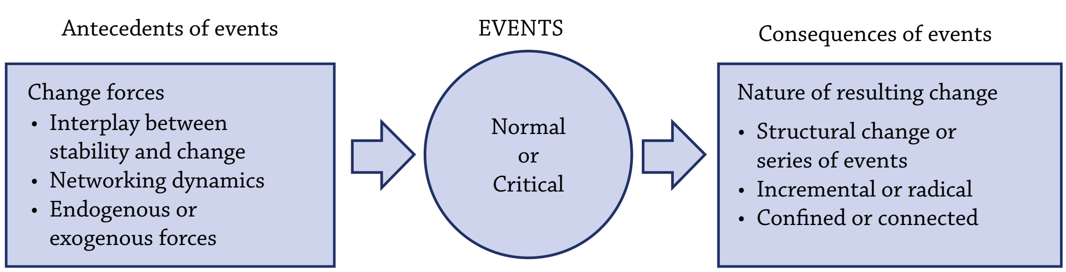
In the same vein, the impact of promotion in marketing of credit has been reported to be significant in some studies, such as by Bertrand et al. (2010) who found out that advertising content strongly affects loan demand by appealing "peripherally" to intuition rather than their reason. Another study (Czarnecka and Mogaji, 2020) observed the use of emotional appeals in advertisements for loans, which are positioned as services providing relief, security, and excitement. While they found sporadic use of negative emotional appeals such as guilt, fear, and sorrow, loans carrying the most risk were found to be advertised with positive emotional appeals.

Promotional practices for marketing of credit products often work against the low levels of financial literacy of borrowers. Renke and Steennot (2020) noted the vulnerability of prospective credit consumers to overcommitting their resources and the inherent dangers posed by credit advertising, which necessitate regulation of credit marketing. The banking industry is not renowned for its efforts to improve the understanding and awareness of its customers. In fact, the U.S. financial industry marketing budget is estimated to be 25 times larger than their financial education budget.

15.4. Empirical Methodology and Phenomenological View of 'Loan Mela'

The study undertook an empirical exploration of 'loan melas' to discern the occurrence of the event through semi-structured interviews (Annexures 1 and 2), of thirteen bankers, who were specifically selected as those having first-hand experience of working in the area of credit marketing and, more particularly, have been involved in organizing the event several times during their career. The interviews, of forty-five minutes to one hour duration, were conducted over the telephone and were guided by a set of questions developed to elicit their recollection about their experience of 'loan melas' in their banks. Data capture was primarily by way of making notes of the responses and comments to the questions, but also in general the ensuing discussion made with the participants. Processing of data comprised of preparation of transcripts of the participant's responses, which were verified by them for their correctness, followed by application of qualitative methodologies suggested by Pentland (1999) and Elo et al. (2010). Both of these are based on study of events as part of a larger process from their linkage to process of change. They view the antecedents or the underlying forces that make an event to happen, the event itself as occurring naturally or critically, and the consequences or the outcome of the event leading

FIGURE 15.2
Framework for Event Analysis



Source: Based on Elo et. al. (2010).

to change. Elo et al. (2010) observe the antecedents as the tenuous situation of balance between stability and change duly affected by network of external and internal forces, leading to the occurrence of the event, and further to the nature and size of change (Figure 15.2). Pentland (1999) specifically suggest the analytical path beginning with the narrative text to reach deeper into the structure of meaning or 'generating mechanism' that drive the variations in respondent's observations.

The following thematic dimensions: (a) goal and objectives (as antecedents), (b) planning and promotion (characterization of the events) and (c) credit growth and loan quality (as consequences), seem to emerge that characterize the phenomena of 'loan melas'. These are described as follows:

Goals and Objectives

It is clear that 'loan melas' were originally initiated at the behest of stakeholders outside of banks. These events were held by banks often to comply with developmental policy and initiatives of national or state governments, such as announcement of loan schemes, directives of the local administration that were taken up by State Level Banker's Committees (SLBC). 'Loan melas' were also organized to take advantage of opportunities emerging during other events such as a 'property mela' organized by builders and real estate agents. The interview responses seem to point towards: (a) certain amount of disconnect between lenders and borrowers despite the widespread access infrastructure of bank branches and therefore (b) the need for external involvement to make bank credit widely available.

> *['Loan melas']...are platforms for bridging the gap between lenders and borrowers.*
>
> *They enhance outreach and access to bank credit to under-served, un-served or far flung prospects.*
>
> *Banks conduct 'loan melas' under compulsion... On direction of government or top authorities to extend loans to weaker sections and underprivileged people.*

However, over time banks seem to have realized that 'loan melas' are also useful for credit marketing in order to (a) boost brand image and present themselves as 'ready to lend' and (b) grow their loan market share in target areas. Hence, 'loan melas' may be purposed towards taking advantage of festive seasons (for retail loans) or cropping seasons (for agricultural loans), for growing the credit business. These events may provide the opportunity to build leads to prospective customers who may decide to borrow from the bank. They may also help branch managers, to face the lending market more directly.

> *'Loan melas' are conducted to develop a bond with people. We give a message to public that we are accessible and to feel free to approach us for their borrowing requirement.*
>
> *Objective of conducting 'loan melas' is customer identification...Large number of leads are identified, often of high value clients who may need personalized approach and service.*
>
> *'Loan melas' provide learning for new people [employees] in sourcing and processing of loans.*

Planning and Promotion

Bank level initiative for organizing 'loan melas' may be part of their credit marketing, but they take place mostly in response to the external stimulus. Oftentimes, a lead bank in an area may take up the responsibility to organize the 'loan mela' where other banks participate. In the process, banks and branches are allocated targets for achieving certain number or amount of lending. Therefore, 'loan melas' may be organized to meet the commitments made by banks for fulfilling larger social objectives.

> *Lead banks take the organizing role and all other banks join.*
>
> *Banks conduct 'loan melas' under compulsion of achieving targeted lending...'Loan melas' are conducted for achieving month-end or year-end targets.*

While 'loan melas' seem to be organized sporadically by banks, there are some amount of operational planning involved through their administrative, credit or marketing offices. Such planning may comprise assessment of potential demand for credit in an area as well as economization of resources such as relationship managers, credit officers, etc. Once decided, the events are executed with immense promotional effort to make them successful. Success of a

'loan mela' could mean achievement of footfalls of walk-in customers, receipt of a number of loan applications, acquisition or accordance of in-principle approved loans.

Before conducting a 'loan mela' we do a lot of advertisement and publicity.

We cannot post Relationship Managers at every small and big branch. There is usually one for every district who may have to travel almost 60 km a day for sourcing a loan. Thus, he can serve only one branch in a day. Branches are asked to collect leads. Relationship manager shortlists the prospective customers and informs them about the oncoming 'loan mela' and asks them to come with basic documents.

Response depends on Branch Manager and his service penetration in deeper geography… Branch managers are already in touch with customers

Loan mela is conducted for multiple products… Operations cost is reduced.

Planning also includes the decision of locating the 'loan mela'. These are located, close to a branch or a group of branches, or at a place where visibility of the event is assured and where customers may find it convenient to reach. Usually, they are located at a central place where the customer would find easy to access the event. Also, they ensure that business opportunities are captured more effectively by the bank.

[Loan melas]… are held at taluka places where people from nearby villages visit for their purchases or other work…. Less potential branches are associated with the nearest high potential branches where 'loan melas' are set up.

In one single place the customer gets so many options to compare brochures, rates, features, etc. from so many providers.

'Loan melas' help optimizing `branch catchment area business opportunities. They help in synergizing the efforts of multiple stakeholders.

'Loan melas' by individual banks may be planned for offering only a certain line of products, such as car loans, home loans, education loans, etc. Accordingly, the events are organized in tie-up variously with major dealers of vehicle, property or consumer durables. During such events customers may get other benefits such as price discounts.

In 'loan melas' for available vehicles, dealer tie ups lead to discounts.

All banks are doing retail loans…Loan melas should focus on agriculture and MSME sector. Under government benefit scheme only 20% are covered. 80% are not covered. It is a ground reality, people are not getting loans.

Credit Growth and Loan Quality

'Loan melas' enable banks to achieve a boost in their loan portfolio while optimizing their operational cost.

Sudden boost of credit as compared to slower general growth.

Product uptake occurs in large numbers and there is effective reach to the masses. Targets are achieved in a shorter time.

The event serves for acquisition of customer information and certain amount of basic processing, such as registering the application onto the loan portal of the bank, completion of legal formalities, valuation, etc. Unlike the branches, as the 'loan melas' are focused upon only a specified function, i.e. lending, they enable the bank staff to devote themselves to the activity. Accordingly, they help customers to better understand the product, the eligibility requirements and the implications for their uptake.

Dedicated attention is not possible in a normal branch environment. In 'loan melas' we provide detailed guidance on providing loans.

Customer is provided details on the loan features and procedures, document requirements, etc. In a branch we may not be able to give as much attention as people are busy with other work and banking operations.

Bank officials guide prospective customers on their queries related to availing the loan. Customers are better able to understand as they compare the offerings of various products and banks.

In most of these events, however, the new loan applications do not have the final conclusion or approval for the transaction. Customers may choose to baulk after obtaining all the information.

Even after this planned and dedicated effort, customers may not avail loans. We contact them later to know the reasons.

Customers come as shoppers and are comparatively open to information and promotions. They are less constrained to ask for details of products and the requirements from their side. They do not have the necessity of taking immediate decisions.

Customers can compare and choose the most suitable products. They may also look to specifically design their service requirement.

Banks, on their part, usually accord the final sanction of the loan only after further credit appraisal and processing, which may occur in the branch or other loan processing centres that have been opened by banks.

In principle approval is given subject to all credit parameters, such as CIBIL scores, income certificates, etc., being met.

15.5. Contribution of 'Loan Mela' to Credit Marketing Process

From the construction of antecedents, descriptors and consequences of 'loan melas', certain aspects of the phenomena emerge (Figure 15.3) that indicate to the importance of such events and their contribution to the function and process of credit marketing. These are described as follows:

External Influence Upon Flow of Credit

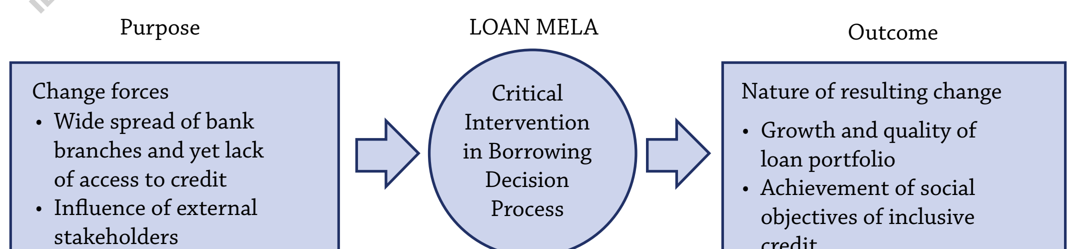
The practice of 'loan melas' indicate that they transcend the typical bilateral buyer-seller transaction involved in credit creation. As discussed earlier, banks are unique institutions in that they specialize in functions, such as loan monitoring, enabling them to lower information asymmetry and transaction costs in lending. But, banks have to lend within regulations and policies that constrain, and more importantly, shape their views of a good or credit worthy customer and lay the pre-conditions for approval of credit. They may have organizational challenges in regards of their customer knowledge and credit management capabilities. Bank's loan portfolios frequently demonstrate pro-cyclical behaviours as they become formed through their internal business and credit planning processes pursuing goals of growth, quality and profitability.

Credit creation, however, has a bigger social and economic purpose. Flow of credit often need to be directed towards the weaker sectors and customers, who by themselves may not be able to fulfil the necessary preconditions set by banks and institutional lenders. The rigidities within the definitions of credit-worthiness and lending processes could be the reason for disconnect between banks and the un-served and under-served population, or those who need credit but fail to get access to the same. There may, therefore, be a need for banks to consider views and perspectives on other ways or methods of lending that could lead to wider development gains.

'Loan melas', enable the inclusion of external stakeholders who may not be directly constrained by the rules and regulations of bank lending. They enable inclusion of goals and objectives of politicians, governments and local administrators who are able to view the distribution of credit as more real-life needs and concerns of their constituencies. Their involvement provides the much needed 'out of the box' motivation and driver for flow of bank credit

FIGURE 15.3

Event Description of 'Loan Melas' as Unit of Analysis



Source: Authors' Construction.

into the economy, though posing a challenge for banks given the limits and firmness of their lending policies.

Complement to Branch Based Lending

Bank lending is not place or location free function. For reasons of addressing the information asymmetry between borrowers and lenders and thereby the monitoring and transaction costs in credit, lending activities are mostly located in specific geographic regions. Banks establish their physical presence by setting up branches in targeted areas. Branches build the brand image of the bank, serve to develop and grow trust with the local community and provide a point of transaction for basing their credit relationships. Thereby, banks build up their market power in the geographies surrounding their branches and are able to derive economic value from lending.

However, geographic location of branches may not just culminate into bank credit. As Aguirregabiria et al. (2019) observed, local market power may have a negative impact on the geographic flow of credit at the local level following economies of scope between loans and the other major function of banks - deposits. They found that while there are economies of scope between deposits and loans at the local level, the former has a significant effect on the market shares in loan markets. Indeed, branching as marketing strategy has a greater purpose towards generation of savings, such as from households leading to accretion of loanable funds.

Branches create a pull affect for growth of credit. Although, banks do not induce their customers into taking a loan, they pursue market segmentation and targeting to generate leads to prospective borrowers. Because the objective for taking a loan, such as purchase of an asset or meeting need for consumption, are embedded in the real life cycle of a customer, branches may not provide the right setting for the purpose of discovering the real conditions and credit needs of borrowers, given the gamut of activities they do. In this regards, the 'loan mela' may serve as a complementing credit marketing platform, particularly in areas where banks already have branches, helping the latter to achieve the objective of increasing lending in local markets.

Responsible Lending and Borrowing

As a tool for marketing and promotion, 'loan melas' inform about bank's intention to lend and the availability of loan products or 'schemes' for distribution. Branches organize the events and ensure publicity in their service area to try and ensure that they have the desired level of footfalls and enquiries on the loan products.

But, the responses indicate that credit sanctions or disbursal of loan amounts are usually not made at the 'loan mela' itself. Lending decisions need greater due diligence, underwriting and documentation before the final approval of a loan. Often, these activities precede a 'loan mela' when customers with already appraised loan application are invited to receive the disbursement and execute the related documents, creating an impression that 'loan melas' speed up the credit process. Also, the loan appraisal activities may succeed the 'loan mela' when the bank staff process the information sourced to arrive at the decision to lend at a later date. In both ways, 'loan melas' do not appear as a quicker route to consummating a lending and borrowing transaction with lower amount of diligence.

Rather, it seems that 'loan melas' are not merely supply side initiatives organized by banks and lenders. They also provide a venue for firming up loan demand where prospective borrowers are able to consider their borrowing decision more carefully. The event enables the lenders to reach out to a potential borrower and play a role in the zero MOT period of the decision process towards taking a loan. The physical setting of 'loan melas' – well publicised events, brochures and pamphlets with information on loan products, bankers available to advice and counsel, congregation of prospective customers, etc. – address information needs of borrowers as well as certain unmet psychological needs, such as lack of confidence due to low level of financial literacy, and hence their dependence on loan providers to hand hold during such decision period.

'Loan mela', therefore, can be the setting for responsible lending by banks. It provides a platform to the borrowers to articulate and evaluate their borrowing needs, relate to their underlying financial condition and confront their realities, better understand the benefits and cost of taking out a loan at the given terms and rationally arrive at the decision to take a loan. Borrowers can determine whether a loan product is suitable for their requirement and the subsequent commitments required for making timely repayments and maintaining collateral. 'Loan melas' may, thus, prevent reckless borrowing and lending, leading to better quality of asset portfolio in the future periods.

15.6. Concluding Observations

'Loan melas' are events organized out by banks to attract prospective borrowers for availing credit from them. Such events have a historical background to their origin and adoption by banks. Starting with external impetus, 'loan melas' have been adopted by banks as a credit marketing campaign. With a variety of emerging formats, the concept has indeed become a widespread practice in the banking industry. There are, however, concerns that marketing of credit through such means, may vitiate the quality of loan portfolios originated by banks. This study has adopted a qualitative methodology to view and analyse the phenomena of 'loan melas' and examine the basis for such concerns from the perspective of bankers. The responses and observations of the study point out to the contrary. 'Loan melas', while providing very important 'non-branch' connect between prospective borrowers with lenders, also plays a significant role in shaping up the borrowing decision by facilitating information search, query resolution and better evaluation of suitability of the loan to the circumstance of the borrower. They seem to provide outsider influence to flow of bank credit, complement to branch based loaning and setting for responsible lending and borrowing. Thus, 'loan melas' may actually enable growth with better quality of advances.

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ANNEXURE 1

Questionnaire for in-depth interview-

1. What are the main objectives for conducting loan melas?
2. How many times a year these are conducted?
3. What are the factors determining the timing of these melas?
4. Which department sets up the guidelines for conducting loan melas?
5. What is the role of branch, regional office and head office in these melas?
6. How the planning and organizing is done?
7. What are the key characteristics of a loan mela?
8. What are the determinants of location for conducting loan melas?
9. Which products are marketed and what are the criteria for selecting those products?
10. Is it organized by single bank, or multiple banks?
11. What are the objectives for banks to participate in loan melas organized by builders and other associations?
12. What are the main benefits from loan melas for banks' marketing function?
13. What is the customer response to these melas?
14. What is the additional service /advantage that a loan mela provides to customers (when customer can as well do the banking in branches)?
15. What are your suggestions regarding loan melas?

ANNEXURE 2

Respondents' Profile

S. No.	*Bank*	*Position*	*Status*
1	Union Bank of India	General Manager, Incharge of Transaction Banking Department	Practicing
2	HDFC Bank	Regional Head, Emerging Enterprises Group (ROM and Goa)	Practicing
3	Bank of Baroda	Deputy General Manager , SCOC	Practicing
4	Canara Bank	Assistant General Manager, Zonal Head	Practicing
5	Canara Bank	Assistant General Manager , Specialized Mid- corporate branch	Practicing
6	UCO Bank	Chief Manager, IT and Wealth Management Department, Head Office	Practicing
7	Utkarsh Small Finance Bank	Independent Director	Practicing
8	CSB Bank	Deputy General Manager, Zonal Manager and Head –Pune	Retired
9	Axis Bank	Senior Vice President and Head , Investment Products Group	Retired
10	State Bank of India	Deputy General Manager	Retired
11	HDFC Bank	Senior Vice President, Head - Retail Banking, Maharashtra and Goa Zone	Retired
12	Bank of Baroda	Faculty and Coordinator Director	Retired
13	Punjab National Bank	General Manager	Retired

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THE *India Banking and Finance Report (IBFR) 2022* is a comprehensive anthology of articles on the domestic and global financial sector. The report covers a wide vista of important subjects, from recent macro-financial developments to green finance, model risk to people risk and CBDCs to loan melas. Each issue is addressed with cogent and incisive theoretical and data analysis. While the observations and recommendations are factual, the style is crisp, clear and simple. The report highlights the challenges and opportunities in the banking and financial sector in an integrated and turbulent world, necessary reforms and prudential measures to ensure sustainable growth and financial stability, as well as lessons for the future. Hopefully, IBFR 2022 will motivate informed discussions on the BFSI sector among practitioners, regulators and policymakers.

UNLIKE institutional reports, the *India Banking and Finance Report 2022* blends unbiased and data-founded analysis that helps understand certain special features of India's financial markets and provides insights into future course of actions required to address current or potential concerns. This is a very useful work for academics, practitioners and policymakers alike and, of course, the students of banking and finance.

Shri N.S. Vishwanathan *Former Deputy Governor, Reserve Bank of India, and Senior Fellow, IIM Bangalore*

THE articles cover a gamut of subjects from monetary policy, credit risk and human resource strategy to new-age opportunities like digital transformation. I am particularly happy that the report addresses emerging and critical topics like climate finance. I strongly recommend bankers to deliberate these well-researched papers and operationalise the same in their strategies.

Shri B. Sambamurthy *Formerly: Chairman, Corporation Bank, Director, IDRBT, and Chairman, NPCI*

THE papers bear the stamp of erudition and efforts put in by the respective authors. The findings and rich references would be of immense benefit to those who are engaged in policymaking and regulation as also to the practising bankers and academicians.

Shri B.V. Chaubal *Chairman, CDSL, and Former Deputy Managing Director, State Bank of India*

THE report provides a 360-degree view of the evolution of the banking system in India, the prudential policies of Indian banks, the challenges faced by them in an increasingly integrated world, and their efforts to be future-ready. Written in a lucid way, the IBFR is a must-read for everyone in academics and policy circles and anyone interested in the role of the banking system in the growth and development of a nation.

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THE report is a useful compendium of thought-provoking articles on the state of India's financial sector. In addition to the usual areas of markets and financial risk management, it focuses on two emerging issues - digital disruption and strategies for the financial sector in view of increasing competition and uncertainty. The report also includes discussions on new areas like green finance and retail banking sentiment index.

Prof. Ashok Banerjee *Director, Indian Institute of Management Udaipur*

THIS volume is rich in insights about a wide range of current issues as well as emerging areas such as green finance and CBDCs, all backed by rigorous research. It deserves to be read by practitioners, policymakers and researchers.

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