Impaired employees in co-ordination with Centre of Excellence, SBI Foundation.

### 10. BUILDING THE RESEARCH QUOTIENT

**Creating Domain Specialist Research Wings:** Domain specialist Research Wings have been created at all ATIs to address business-related concerns. More than 65 investigative studies were carried out by the Research Officers in FY2020, and 102 recommendations made in these studies were accepted for implementation by BUs.

**Post-Doctoral Research Fellows:** PDRFs have been recruited for innovative and high-end academic research activities relevant to the BFSI sector. The PDRFs have shared their research findings in National and International conferences. They have published their research works in leading journals to establish State Bank of India's footprint in the domain of BFSI research.

**Fine-tuning Summer Internship Policy:** The summer internship policy was revisited during the year and finetuned to engage students in businessrelevant projects. Total of 305 students pursuing various educational courses in all top-level UGC/AICTE approved private, and Government institutes were engaged under the Summer Internship programme.

### 11. KEEPING THE MOMENTUM

Even though COVID-19 struck at the end of FY2020, your Bank's virtual learning tools ensured that continuity of training programmes were kept intact. A seamless transition to anytime learning and on-demand webinar classes were adopted extensively.

# 2. INFORMATION TECHNOLOGY

# A. NETWORK, ARCHITECTURE AND INFRASTRUCTURE

To ensure reduced downtime and seamless stable connectivity, your Bank onboarded two additional Telecom Service Providers (TSPs), taking its total TSP partners to eleven. To have a single point of control and monitoring of Network, your Bank also established a Network Security Policy Manager (NSPM) during the year.

Using a comprehensive approach for the successful development and execution of IT strategy, your Bank also started an Enterprise Architecture (EA) journey for conducting enterprise analysis, design, planning, and implementation. Today, with strategically driven planning, analysis, design, and execution, your Bank has the best tools in the industry to support its enterprise architects, business and IT stakeholders,

"Meghdoot", your Bank's private cloud, which was commissioned in 2014, has been successfully delivering IAAS for 1000+ applications. It has the capacity to host 15,000 Virtual Servers with a scalable architecture to provide infra on demand and is on its journey towards establishing its PAAS (Platform-as-a-Service). Your Bank has its own first "State of the Art", "TIER- 3" Data Centre at a safe seismic zone (Zone2) in Hyderabad, equipped with nine layers of security.

Your Bank is rapidly consolidating all its physical servers located at 22,100+ SBI's Branches, to a central location with Data Centre Security in the virtual environment, resulting in power saving and thus reduced greenhouse gases.

Your Bank proudly holds the world's largest Oracle databases and has successfully upgraded to Oracle DB version 12c.

### B. PRODUCTIVITY AND EFFICIENCY

**Enterprise Mobility Management (EMM):** To increase the internal productivity, your Bank has adopted an EMM solution, which provides an 'officeon-the-go' tool for facilitating work from anywhere or anytime, enhancing employee productivity and efficiency.

**OFFICE 365:** Office365 provides a productivity suite of applications for the employees of your Bank. It is a platform for hosting internal application/ workflows, which are helping your Bank to achieve a paperless work environment by providing automation of workflows.

**IT Service Management (ITSM):** It is another tool to monitor IT services for end-users providing Proactive Monitoring of IT Infrastructure by generating critical alerts to be resolved on a priority basis.

SMS Seva- Appliance Based SMS gateway: Your Bank has Single integrated system capable of handling 50,000 SMSs per second and 40 crore SMSs per day against the existing capacity of handling 5,000 SMSs per second and 12 crore SMSs per day, ensuring that customers gets their SMS alerts for critical transactions.

User **Experience Design Centre** (UXDC): Your Bank has state-ofthe-art UXDC, the first of its kind in Public Sector Banking Industry. It aims to provide meaningful and relevant experiences to users. This involves the design of the entire process of acquiring and integrating the product, including aspects of branding, design, usability, and function. It ensures that your Bank's processes and products truly delight its customers, and keep on improving with time. Your Bank is also embarking in the field of augmented and virtual reality (AR/ VR), to make more immersive designs for enhancing customer experience.

Application Testing: Your Bank ensures that each application undergoes a host of tests. Your Bank conducts rigorous performance testing to ensure that a new application meets the stated parameters in terms of responsiveness, scalability, reliability, resource usage and stability under high volume workload. As your Bank's network is spread across length and breadth of the country, it therefore experiences varying bandwidth availability at a different location. You Bank introduced throttle tests to determine whether applications perform well under varying network speeds. These tests can be used for developing lightweight applications that can perform well on low network bandwidth.

Robotic Process Automation (RPA) Tool: Your Bank also uses an RPA tool, which allows the configuring computer software, or a "robot" to emulate and integrate the actions of a human interacting within digital systems. RPA robots utilize the user interface to capture data and manipulate applications just like humans do. It communicates with other systems to perform a variety of repetitive tasks. Your Bank is using UiPath for Automated Regression testing of various applications. This tool is 20-30% faster as compared to traditional automation testing tools. It does not require specialised automation engineers, thereby, saving significant cost in terms of times and money in the long run.

Mobile Automated Testing (MAT) Tool: Your Bank uses Appium, an open-source tool for automated testing of mobile apps on mobile devices such as (Android and iOS), tablets and iPads, amongst others. Appium makes mobile app regression easy as and when they are updated with new features and functionalities.

# C. YONO

During FY2020, the all-in-one digital platform YONO has been bolted with numerous additional feature-rich products, such as:

- Pre-approved paperless personal loan is offered online without the need to visit the branch
- Convenient fund transfer through BHIM UPI and QR Code
- YONO Cash that enables cardless cash withdrawals from ATMs and PoS as well as cashless shopping at multiple PoS
- 'Tap and Go' payments using wearables and smartwatch
- Online purchase of various financial products of your Bank's Joint Venture Companies (SBI Life, SBI Caps, SBI Cards, SBI Mutual Fund and SBI General Insurance) on a single platform. For example, customers can instantly avail life insurance cover up to ₹ 20 lakh

### D. ANALYTICS, AI AND MACHINE LEARNING

Addressing the critical pain points within the system, your Bank's Analytics Department is committed to deliver on its vision of becoming the Centre of Excellence and a Prominent Value Creative Department, by developing multiple Predictive Al/ML based Models. Over the last five years, the Analytics Team has matured and delivered various value creative models using the latest tools and algorithms in almost all the areas of your Bank. During the past two years, 30+ Machine Learning Models have been developed in-house. A few examples of such products and models are:

**Business Areas:** Recommendation Engine for leads in various P-Segment Loans, Propensity Based end-to-end digital "Pre-Approved Personal Loan (PAPL)", 4-click SME Loan Product "Pre-Approved Merchant Loan (PAML)"

**Fraud and Risk Areas:** Models developed to detect suspicious ATM Fraudsters, Possible Money Laundering Activities in SB accounts

**Credit Risk Areas:** Models developed to identify Early Warning Stress Signals in both SME and P Segment loans

Other Areas: Models to identify Income Leakage, Cross-Sell and Up-Sell

Your Bank is also entering into new territories of developing AI and ML based models, such as digital lending to SME customers through the "Pre-Approved Business Loan (PABL)", Loans to BSBD customers, amongst others.

Your Bank's adoption of AI and ML is in alignment with the Gartner Hype Cycle, an industry-recognised tool that shows global technology trends in AI and ML. As directed, your Bank has outlined a "Board Approved Three Year Roadmap on the Adoption of AI and ML" in your Bank.

### E. BUSINESS INTELLIGENCE

Business Intelligence is the precursor to advanced analytics. Keeping this in mind, your Bank is introducing high value creative dashboards with visualisations, graphics, built-in intelligence, amongst others, that provides insights from the top to the grass-root level in all areas, facilitating quality decisions. The dashboards are designed to be available on all platforms, such as intranet, internet, iPad, Mobile, amongst others. The department is well on its way in its journey towards becoming the Single Source of Truth for your Bank. In this pursuit, it has developed several Master Dashboards and automated maximum number of data points to minimise data quality issues, meet RBI's stipulation of Element Based Reporting and various compliance and risk needs, thereby improving the reputation of your Bank. The Department has also been instrumental in coming up with the Roop Rekha dashboard in alignment with the Government's vision of a US\$ Five Trillion Economy.

### F. CUSTOMER RELATIONSHIP MANAGEMENT (CRM)

Your Bank has implemented a State-of-The-Art CRM Solution for the integrated management of Sales, Service and Marketing activities. It captures customer interactions across systems and channels and provides a 360° view. It has built-in campaign management modules and ensures the timely delivery of service. The CRM solution has been widely used across your Bank with user logins crossing 30 lakh per month, covering more than 65% of users.

# G. DATA WAREHOUSE (DWH)

Over the last 10 years, your Bank's DWH has been instrumental in providing data across your Bank on a T+1 basis, connecting 71+ source systems. The DWH is equipped to meet the RBI's new direction with regard to "Element Based Reporting", by acting as a Central Data Repository of your Bank.

With the explosion of data, especially from the ever-expanding digital ecosystem, your Bank plans to set up a "Next-Gen Data-Warehouse" with state-of-theart Architecture by December 2020 to provide Data on Demand and to address Data Quality and Data Integrity issues. This should strengthen the maturity of your Bank's Analytics Team in delivering increasingly innovative solutions in the future.

### H. DATA MANAGEMENT OFFICE (DMO)

Your Bank has become a pioneer in the Indian BFSI sector by establishing a robust Data Governance Structure and has set up the Data Management Office under the Chief Data Management Officer. The Data Governance Framework is being driven through an Apex-Level Data Governance Council (ADGC), supported by the Data Governance Council (DGC). This structured approach will reduce complexity and ensure data quality and security across your Bank, thereby enabling better utilisation of its Data Assets.

# I. ANALYTICAL PLATFORM FOR REPORTING, RISK AND COMPLIANCE

To optimise financial reporting and enable its risk and finance functions, your Bank has adopted a state-of-the-art financial analytics solution. This ensures data accuracy and provides insights into Profitability, ALM and Regulatory Compliance. It also optimises analytical business functions such as Economic Capital, FTP and Regulatory Capital. Your Bank is in readiness to adopt the IND-AS standard, expected to be effective from April 2020.

#### J. EFFICIENCY

To reduce vendor concentration risk in its IT ecosystem and the related vendor dependence, your Bank has developed a number of in-house IT applications. These applications are expected to bring significant efficiency to your Bank. Some examples of such applications are:

- Budgeting and Expenditure Tracking Application (BETA)
- Partner Relations Management Software (PRMS)
- Generic Reconciliation Software
- CRIMMAR (Central Repository of Information and Monitoring-tool for Automation of Regulatory Reports)

# K. PAYMENT AGGREGATOR AND PAYMENT GATEWAY (E-PAY & PG)

Your Bank provides indigenous, unique, PCIDSS certified secured platform for facilitating seamless e-Commerce transactions between Business. Merchants, Customers and Financial Institutions, for various kinds of payment modes. The platform is provided through your Bank's Payment Aggregator (SBI e-Pay) and Payment Gateway (SBIPG) applications by integrating with thousands of Merchants on the one end and a large number of Payment Channels such as Banks, Wallets and Cards at the other end. SBIPG processes all debit and credit card transactions of Payment Aggregators, SB Collect, SBI-MOPS and YONO.

# L. PAYMENT SYSTEM (PS) AND CASH MANAGEMENT PRODUCT

Your Bank holds a major share in NEFT outward remittances with 25.73 crore transactions\* with over 9.38% market share. In RTGS, 1.79 crore outward transactions were effected during FY2020, implying a market share of over 11.95%. Your Bank, now, provides NEFT facility to all its customers on a 24x7 basis and using the secure SWIFT messaging platform for transmitting cross border financial and non-financial messages.

Your Bank has emerged as a Technology-Driven Platform for straight-through processing of bulk transactions of Corporates and Governments. During the year, your Bank has onboarded prestigious clients such as Railways, Department of Post, State Government such as Madhya Pradesh and Chhattisgarh. It has also taken mandates from clients such as India Bulls, Religare, Tech process, Bajaj Finserv, amongst others, to earn fee income and reduce the workload on branches.

# M. ALTERNATE DELIVERY CHANNELS

To provide seamless online experience, your Bank offers diverse digital banking services to ~681 lakh retails users, ~26 lakh corporate users, ~54 crore debit card customers and providing mobile app in nine regional languages (Gujarati, Marathi, Telugu, Tamil, Kannada, Malayalam, Punjabi, Odiya and Bangla).

Your Bank has introduced many new services such as:

- Real-Time Demand Loan for e-Commerce Transactions, OTP over email to Resident Indians added to RINB portal
- Pre-Approved Merchant Loan, Debit card authenticated onboarding for Saral customers and Account opening facility for non-individual accounts through CINB
- Online e-Mandate creation for payment of EMIs
- Integration with Merchants in the UPI Platform for providing financial services through online and QR Applications
- EMI@POS functionality
- National Common Mobility Rupay Cards on qSparc specification to ensures seamless mobility to commuters across the country



# N. CYBER SAFE

Your Bank is a vanguard in protecting customers conducting online and offline transactions. It achieves this by using enhanced measures such as Captcha at Login (image and voice) and the provision to Lock and Unlock INB access. It also helps customers to enable and disable UPI functionality through various channels such as CBS, Customer Request and Complaint Form, Internet Banking and YONO Lite, and Prepaid cardholders to set a limit as per their requirements. In addition to this, OTP based card withdrawal functionality has been introduced for Cash withdrawal transaction of above ₹ 10,000 from 8 PM to 8 AM. Your Bank's MVS-EPS-OMS is a solution to provide Uniform Customer Interface to implement standardised and regulated security policies at ATM endpoints and to expedite resolution. Your Bank has digitised the Parliament Canteens by providing Prepaid Cards to Members of Parliament.

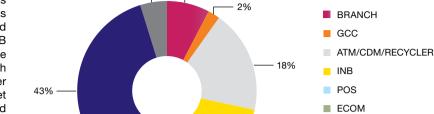
# O. FOREIGN OFFICE AND TREASURY SUPPORT SERVICES

Your Bank has established an active High Availability Environment for applications viz. Finacle Core, Treasury and Connect 24, which ensures enhanced reliability, efficiency, productivity, security and scalability of applications, and seamless customer experience. It has also set up a BCP site for the dealing room, equipped with the latest infrastructure to ensure continuity in operations during disaster situations.

YONO SBI Global, a comprehensive mobile banking application with various attractive features, has been launched in the UK and Mauritius.

Your Bank has implemented Open Banking in UK, Germany, Belgium, and Bahrain in FY2019. Furthermore, the Internet Banking facility for corporate users has been launched in Sri Lanka and Germany.

Your Bank has extended the facility to integrate a corporate's forex business on the YONO platform along with the Exim Bills, where the the entire documents management and workflows have been automated.



9%

% Share of Alt Channels Apr '19-Mar '20

5%

Number of Transaction (in Crore) Branch GCC ATM/CDM/ INB POS ECOM MOBILITY KIOSK RECYCLER (FI) 106.32 24.88 246.53 158.16 77.62 67.10 578.00 63.13

6%

12%

### P. MERCHANT ACQUIRING BUSINESS-OPERATION (MAB-OPS)

5% -

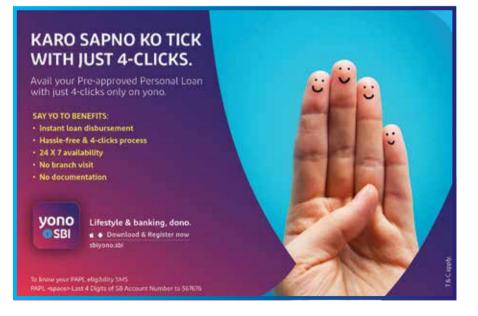
During the year MAB-IT Op executed customer centric projects like YONO Cash@PoS and YONO Sale@PoS, Metro projects for enhanced customer delight in affecting payments to the merchants and EMI on SBI debit cards on Pinelabs managed terminal etc. to name few. As per RBI, Your Bank is number 3 in terms of POS terminals deployed in the country with 6.73 lacs terminals (13.43% market share) as on 31-03-2020.

Mobility

KIOSK (FI)

### **Q. SPECIAL PROJECTS**

Your Bank is working on several special projects to bring an enhanced banking experience to its customer. Some key initiatives include:



**Website:** Your Bank has revamped its corporate website and launched its Hindi version for better customer experience. Additionally, a sustainability website was launched to showcase your Bank's sustainability initiatives.

**GST Tax Engine:** A centralised solution was introduced to meet customers' requirements with respect to GST, for example, the filing of GSTR1, GSTR7, GSTR3B, returns, matching of GST2A with purchase data, generation of Consolidated GSTIN wise invoice, Realtime invoice, and E-Way Bill generation.

**NPS (National Pension System):** Your Bank has launched a pan-India Centralised Application for serving the National Pension System.

**CKYC:** Approximately 1.23 crore CKYC numbers were generated, and 12 lakh CKYC records were updated using C-KYC application.

**SBI Wealth:** A personalised service offering of diversified banking products and services was introduced, topped up with best-in-class lifestyle benefits to your Bank's premium customers. In addition to this, a Global NRI e-Wealth Centre was started.

**STP (Straight Through Processing) Implementation in APY (Atal Pension Yojana):** Your Bank facilitated the automated uploading of subscriber registration and contribution files into the NSDL CRA system.

# R. CORPORATE AND SME LOANS

Through the Loan Life Cycle Management System (LLMS), an in house developed application, the entire life cycle of the credit process has been automated, leading to the standardisation of the credit process by enhanced risk management, leading to an enhanced user experience by improving the TAT.

e-Mudra: Available to common man 24X7, digitising the entire Mudra loan journey from applying/processing to disbursement without any manual intervention.

**NBFC Co-origination:** Your Bank has increased its Priority Sector Advance portfolio by introducing an automatic process of Integration with NBFC for coorigination of demand and term loans of the leads sourced by NBFC. The State Bank of India disburses the loans in a predefined ratio, while the NBFCs carries out the necessary follow-ups and recoveries.

**CPM analytical tool (PSM):** New functionality has been launched by analysing the Data for effective Post sanction monitoring.

Advanced PACE Tool: Consolidating all bank transactions of a customer and categorising it based on logic inbuilt, to arrive at net business turnover by netting off all non-business transactions.

#### S. RETAIL LOANS (RLMS)

Your Bank caters to Retail Loan underwriting and follows up at the entire Bank-level by providing end to end credit journey through five applications, that is, LOS (PB), LOS (Agri), OCAS, OPAS and LCS.

LOS PB: It links over 21,000 branches, RACPCs, RASMECCCs, RBOs and more than 1,00,000 users. In FY2020, a total of 30,36,112 loan accounts amounting to ₹ 2,66,449 crore have been sanctioned in LOS PB.

**LOS Agri:** It links more than 21,000 branches, RACCs, RBOs and more than 1,49,000 users. In FY2020, total 41,77,068 loan accounts amounting to ₹ 62,976.54 crore were sanctioned.

**AGRI Gold Loan:** A loan scheme that reduces the entire loan journey from applying loan to disbursement to seven minutes was introduced in FY2020.

**CLP for Auto Loan:** A contactless module in CLP for real-time in-principle sanction through machine-based analytics and credit decision was introduced in FY2020.

# T. FINANCIAL INCLUSION AND GOVERNMENT SCHEMES (FI&GS)

To enhance Financial Inclusion and add customer convenience following new facilities were introduced during FY2020:

**Bill Payment through FI channel** (BBPS): An additional avenue for customers to pay utility bills at CSP outlets.

**YONO Cash:** FI and Non-FI Customers can withdraw cash through YONO App using MATM at CSP outlets, without using ATM cards.

Aadhaar Data Vault in BC channel: Regulatory requirement of Aadhaar data vault in BC channel implemented to reduce the footprint of Aadhaar in the ecosystem.

**Doorstep Banking:** New application where customers can initiate a request for cash pick up, cash delivery, cheque pick up from his home and workplace.

Aadhaar Data Vault: Aadhaar Data Vault was envisaged as a major initiative in your Bank to protect the privacy of Aadhaar Number holders in accordance with the guidelines laid down by UIDAI for enhancing the security of Aadhaar authentication ecosystem. It not only reduces the footprint of Aadhaar numbers but also ensures only trusted and authorised access to Aadhaar numbers.

### **U. INNOVATION CELL**

Your Bank has a state-of-the-art dedicate Cell that looks into innovative ideas in the field of Banking. Experimenting with many ideas, it selects and implements those that make sense for your Bank. Some key exciting initiatives currently undertaken are:

**Start-Ups Engagement Programme:** To procure innovative products and solutions from Fintech Start-ups, which are based on the emerging and niche technologies with a high potential for employment generation or wealth creation, and those that are useful for your Bank.

Hackathon and Crowd Sourcing: The objective is to promote an outcomebased technology culture amongst startups and in-house developers, with the focus on developing cutting edge solution for your Bank in an agile manner.

**Intrapreneurship Scheme:** This scheme aims at collaborating with and incubating strong ideas from its employees in a focussed and directed way.

# V. CUSTOMER SERVICE

Your Bank has implemented a robust state-of-the-art CRM solution with a comprehensive Complaint Management System (CMS) as an integral feature of the system. The CRM solution helps your Bank's stakeholders with a 3600 view of customers for an enhanced engagement. The CMS helps customers to lodge their complaints and receive their feedback, suggestions, and queries through its various channels such as Contact Centre, Website, SMS, Email as well as your Bank's Branches and Offices. State Bank of India's round-the-clock contact centres operate 24\*7\*365 from four different geographical locations, servicing its customers in Hindi, English and 10 major regional languages.

For improving the quality of resolution of customer grievances, your Bank has established dedicated Centralised Complaints Resolution Centres at the Local Head Office level. Proper and timely resolution of customer grievances is the priority. Towards this end, your Bank has introduced a system for seeking feedback from customers on how well it resolved their complaints. You Bank has also put in place a system of incognito visits to branches, for assessing the level of customer service and initiating corrective action if required. Furthermore, it conducts Root Cause Analysis across major areas of complaints on a continuous basis and carry out the required product and process improvements to reduce future complaints.

Your Bank has been aggressively embarking on digital banking and have earmarked several more processes for digitisation in the near future. Its CRM tool, backed by data analytics and artificial intelligence, is transforming customer experience and satisfaction for the better. Your Bank conducted several outreach programmes such as Mega Customer Meets, and Customer Town Hall Meets during the year. It had also conducted Customer Service Surveys during the year and is utilising the results of these surveys for bringing about improvements. Your Bank has also conducted various campaigns for a reduction in complaints during the year, with encouraging results.

# 3. RISK MANAGEMENT

# A. RISK MANAGEMENT OVERVIEW

Risk Management at your Bank includes risk identification, risk assessment, risk measurement, and risk mitigation with its main objective to minimise the negative impact on profitability and capital.

Your Bank is exposed to various risks that are an inherent part of any banking business. The major risks are credit risk, market risk, liquidity risk, and operational risk, which also includes IT risk.

Your Bank is committed to creating an environment of increased risk awareness at all levels. It also aims at continually upgrading the appropriate security measures, including cybersecurity measures, to ensure avoidance or mitigation of various risks.

Your Bank has policies and procedures in place to measure, assess, monitor, and manage these risks systematically across all its portfolios, which makes it amongst the leaders to undertake the implementation of the advanced approaches under credit, market, and operational risk. With a view to adopt global best practices, State Bank of India has also initiated the enterprise and group risk management projects, which are being implemented with support from external consultants.

RBI Guidelines on Basel III Capital Regulations were implemented, and your Bank is adequately capitalised as per the current requirements under Basel III. An independent Risk Governance Structure, in line with international best practices, was put in place, in the context of separation of duties and ensuring the independence of risk measurement, monitoring and control functions. This framework visualises empowerment of Business Units at the operating level, with technology being the key driver, enabling identification and management of risk at the place of origination. The various risks across your Bank and the State bank of India Group are monitored and reviewed through the Executive Level Committees and the Risk Management Committee of the Board (RMCB), which meets regularly. Risk Management Committees at Operational unit and Business unit level are also in place.

### 1. CREDIT RISK MITIGATION MEASURES

Your Bank has put in robust credit appraisal and risk management frameworks in place for identification, measurement, monitoring and control of the risks in credit exposures. The industrial environment is scanned, researched, and analysed in a structured manner by a dedicated team for deciding its outlook and growth appetite for each of the identified 39 industries and sectors. which constitute about 72% of your Bank's total advances (excluding Retail and Agri). Risks in these sectors are monitored continuously, and wherever warranted, the industries concerned are reviewed immediately. Impact of events such as Supreme Court Ruling on License Fees and Spectrum Usage Charges in Telecom Sector, liquidity risk management framework for NBFC, export subsidy in Sugar industry, falling prices and rising imports from FTA countries in Steel sector, to name a few, were analysed and appropriate responses to these situations were strategised by your Bank to mitigate possible risks. Exposure to sensitive and stressed sectors such as Real Estate and Telecom are being reviewed at halfyearly intervals. Sectors such as Power, Telecom, Iron and Steel, Textiles, which are going through a challenging phase, are watched continuously, and analysis of new developments are shared with the business groups to enable them to make informed credit decisions. Knowledge sharing sessions are conducted for the benefit of the operating staff at various levels.

Credit rating thresholds for each industry are decided based on the outlook. Your Bank uses various internal Credit Risk Assessment Models and scorecards for assessing borrower wise credit risk.