



Mindtree

A Larsen & Toubro Group Company



Tech Trends In

# Global Capital Markets

→ 2023



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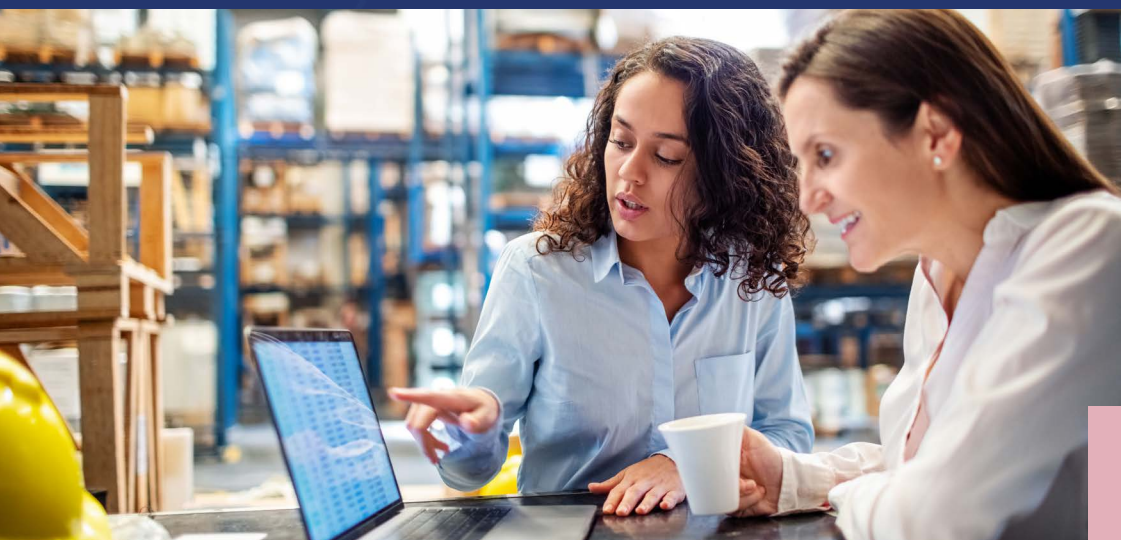
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## INTRODUCTION

The entire financial industry, particularly capital markets, is witnessing a wave of transformations with several aspects that intersect and overlap. Technological infrastructures are being upgraded to next-gen technologies and business models and customer experiences are also being re-defined to meet new economic realities. The competition from fintechs encroaching on traditional banking services has seen success stories riding purely on tech adoption and customer-centric services. This has challenged the reliable revenue zones of banks.

These changes are prompting banks to transform their legacy infrastructure to become more agile and lean, remolding the service approach to a more customer-centric approach. The large-scale change in the technology stack of banks also alters the way trading business and associated functions operate. The capital markets segment is also undergoing several changes arising from digital and cloud transformations, adoption of Artificial Intelligence (AI) and Machine Learning (ML) models, experimentations with DLT (Distributed Ledger Technology) and a plethora of adaptations and enhancements due to emerging risks and opportunities.





### Trend 1:

## ESG investing

Environmental, social, governance (ESG) investing is witnessing maturity much faster than predicted, with the focus having turned to the transition and outcomes, companies and investors are moving into the implementation phase of their net zero journeys.

Through 2021, a total of \$649 billion has been invested in ESG-focused funds, which is a new high. This is an increase from the prior years' \$542 billion and \$285 billion. ESG funds currently account for 10% of all fund assets worldwide.

Stocks of companies with strong ESG compliance ratings have performed well. The MSCI World ESG Leaders' index gained 22 percent by the end of 2021, compared to 15 percent for the MSCI World Index



### Trend 2:

## Operational resilience

The ability of a company to maintain business operations in the face of an unanticipated disruption is known as business continuity (like disasters, system outages). Operational resilience is a process and a quality of an organization that allows it to react quickly to changing environments and needs (like Covid impact and technological advances) that extends beyond BCP (Business Continuity Planning).

The Covid-19 pandemic has made operational resiliency an important program for every company worldwide. Businesses of various sizes and types had to adjust to remote work, restructure physical workspaces, and remodel logistics and supply networks because of sweeping changes due to pandemic. The Financial Conduct Authority, Prudential Regulation Authority and Bank of England (joint FCA/PRA/BoE) rules and guidelines have come into force on 31 March 2022 in the UK and in US where the Federal Reserve (Fed), Federal Deposit Insurance Corporation (FDIC), and Office of the Comptroller of the Currency (OCC) published a joint paper in October 2021 prescribing sound practices to strengthen operational resilience.



### Trend 3:

## M&A and SPAC

Against the backdrop of a strong economic recovery, indicated by positive GDP growth and better market liquidity aided by waning global uncertainties due to Covid-19, business leaders are feeling a new sense of confidence. Riding these positive sentiments, the market is witnessing a surge in M&A.

Two major trends are emerging in this space. Companies are looking to improve their technological capabilities to change their business models. Companies are taking Special Purpose Acquisition Company (SPAC) route to overcome complexities and the time involved in going public. With hefty liquidity available in the market (dry powder of assessments of \$1.9 trillion), 400-500 SPACs yet to make a deal and private equities with dry powder of \$2.3 trillion ready to make an impact, the M&A space will be full of action in the next few years.



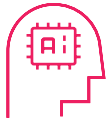
### Trend 4:

## Post LIBOR era

The London Interbank Offered Rate (LIBOR) is a benchmark interest rate that reflects the cost of borrowing between banks. It is also used for other financial products like derivatives such as interest rate swaps or currency swaps. It will be phased out by June 30, 2023, given the scandals and issues about its usefulness. It is being substituted by the Secured Overnight Financing Rate (SOFR).

A large number of US hedge funds, fund managers, investment banks, and other financial institutions are still not fully prepared for the transition as per a 2021 survey. More than half of these institutions still use LIBOR, and these ones should be fully geared up for the 2023 phase out of LIBOR.

The USD LIBOR transition will be the biggest challenging task ahead. Market participants will need to prepare for the USD LIBOR discontinuation and complete the legacy USD LIBOR transition through active transition or strong fallbacks as part of the phase II LIBOR transition process.



#### Trend 5:

### Artificial Intelligence (AI) and Machine Learning (ML)

Artificial intelligence and Machine Learning (AI/ML) are already on top-of-mind for financial services customers across the industry. According to a recent Broadridge survey, enhancing automation through Artificial Intelligence (AI) and Robotic Process Automation (RPA) is a significant long-term goal for 64% of sell-side organizations.

According to IDC, "by 2023, global spending on AI systems will be approximately \$98 billion". That is a compounded growth of 28.4%. An Economist Intelligence Unit (EIU) research report found that 86% of financial services executives aim to increase their AI-related investments till year 2025.

Banks, insurance companies, and capital market firms are applying Artificial Intelligence and Machine Learning across a broad range of use cases including customer onboarding, document processing, fraud finding, predictive analytics, and personalized recommendations



#### Trend 6:

### Open finance

Open banking has existed in some form for years, but it is only now, thanks to fintechs, that its potentiality is being tapped. The main drivers for adoption of open finance include the changing habits of younger investors who look for digital experiences, digitally supported investment advice, newer revolutionary and more suitable products, faster onboarding, and access to alternative asset marketplaces. With an ever-growing number of customers and transactions on the open finance platform and regulatory initiatives and data exchange standards being initiated, open finance will have a long trending revolution in the wealth and investment sector.



#### Trend 7:

### Regulatory, risk, and compliance

Financial services firms confront a variety of obstacles with epidemic in its third year, ranging from greater operational complexity to emerging technologies. As regulatory bodies go from the planning to the execution phase, we should expect increased regulatory activity in the coming years.

The focus areas of regulatory activism will be around the three themes:

- Responding to rapid changes due to covid-related challenges, w asset classes, and digitization.
- Maintaining focus on data protection, cybersecurity, and fraud prevention.
- Risk mitigation due to cloud, third-party involvements, and resiliency.



#### Trend 8:

### T+1 Trade settlement cycle compression

Based on extensive industry surveys and engagements, all indications are towards market participants being increasingly in favor of T+1 to take advantage of capital and operational efficiencies. This also reaps the benefits of risk reduction and margin requirements, that would add to easing out of liquidity especially during volatile and stressed market conditions. The Depository Trust & Clearing Corporation (DTCC), leading clearing and settlement services provider, unveiled a two-year industry roadmap in February 2021 to reduce the settlement cycle for U.S. equities to one business day (T+1) after trade execution.

In agreement with market participants and regulators, DTCC suggests that the U.S. settlement cycle should be T+1.



### Trend 9:

## Cloud and digitization

According to a recent survey, cloud investments have paid off for capital market firms in terms of improved profitability (55% of firms), increased revenue (50% of firms), increased market share (55%), and decreased costs (51%). Capital market firms' average spending on cloud has increased to an average of \$41 million.

Cloud is helping asset and wealth managers:

- Leverage data on the cloud to drive better investment decisions and generate additional insights for portfolio managers.
- Improved data governance allows for more efficient reporting (both client and regulatory).
- Along with traditional data sets, use non-traditional data sets (such as social media) to design approaches to achieve better returns.
- Offer customized, ongoing, and consistent experience through cloud platforms for the likes of CRM and Salesforce.
- Utilize plug-and-play architecture that reduces time-to-market.



### Trend 10:

## Distributed Ledger Technology (DLT)

Legacy processes and systems have created complexity, lack of transparency, siloed operations, and fragmentation across wealth management markets. These have been impacting costs, market liquidity, and profitability. Recent experiments are proving DLT's viability in addressing significant operational inefficiencies and increasingly improving profitability.



### Trend 11:

## Re-imagining operating models in a digital world

An operating model is the blueprint for how value is created and delivered to target customers by an organization. Firms across the world are highly engaged in responding to and recovering from Covid-19's disruption of the 'normal' business practices. Challenges about future operating models continue to surface, and they must be tackled if businesses are to succeed and re-focus on growth. Traditional methods of how and where work is done, and by whom are being phased out. Aspects such as resiliency and adaptability that were gaining primacy in past few years are becoming 'must-haves'.

To embrace these aspects, firms must quickly re-imagine their operational models in a comprehensive and integrated manner.



## Trend 1

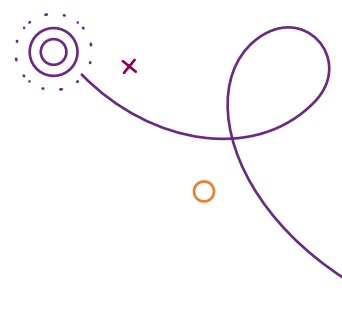
# ESG investing

The agenda for sustainable development of the US, involving the target for achieving 17 sustainable development goals (SDGs) has generated enough awareness that the demand to have an action plan in place is growing day by day. This is evident from the climate agreements in Paris and recently concluded COP26 summit in Glasgow. The climate change activism and demand for sustainable business practices have generated enough momentum for corporations, banks, and regulators to redefine and realign their agenda and policies towards net-zero, greener and carbon neutral commitments. Banks and asset managers are the core of financing climate-related activities.

Thus, there is greater pressure and regulatory focus on such institutes to appear more climate conscious and greener in their core business practices as well in their overall outlook. This is evident in the surge in activities such as green bond issuances, diversifying portfolio reallocations to sustainable sectors, curtailing financing of carbon intensive industries, and promoting renewable energy creation. A growing appetite for realigning investments towards greener opportunities is creating demand for new markets such as carbon trading, offset trading, ESG (environmental, social, and governance) linked financial products such as repos, swaps and credit structures.

The ecological and social aspects of financing are being promoted by regulators. For example, the key goal of the EU's Sustainable Finance Action Plan is to redirect capital towards sustainable and carbon-friendly investments. The same plan also includes the sustainability and the risk management framework of the banks. Moreover, issuers and regulators will have a better gauge of the pricing and stress requirements. Given the worldwide ESG phenomena, many concerns remain in the financial sector, as regulators and investors are yet to establish ESG investing standards. Expectation is that banks will continue to embrace this new trend by ESG aspects into their strategies, operations, and processes. ESG standards are providing a yardstick for assessing a company's operations and looking at possible investments. When banks invest along these lines, they can move closer to becoming socially and environmentally conscious institutions as desired by their stakeholders.

Financial institutions must assess the impact of ESG factors on their business and operations and emphasize transformation of key functions (such as investment processes, product governance, risk controls and so on), based on regulatory guidelines and larger market tendencies.



## Way forward

ESG investing is showing an impressive growth trend. By 2030, assets in dedicated ESG funds are estimated to climb from current \$8 trillion to \$30 trillion.

A big number of asset managers and owners have made net-zero commitments in 2021 and these will be put into action and practice in coming years.

We can expect to see more asset managers working to report on ESG engagement outcomes quantitatively rather than only providing case studies in their stewardship reports.

Increased activism around social and economic injustice and heightened awareness of climate change has prompted investors towards sustainable investing. Many investors now prefer to use their money to create change in the world.

Regulatory action is accelerating globally, with focus on disclosures and reporting.

- The Sustainable Finance Disclosure Regulation (SFDR) of the European Union now extends to financial services and wealth advisors.
- In the US, climate change reporting is being made mandatory along with more disclosure reports.
- In Asia, China is working with the EU on taxonomy classifications and Hong Kong regulators are focusing on climate reporting standards.



## Key takeaways

Global ESG is becoming increasingly popular with millennials and in general investors are considering making socially responsible investments. With the pandemic, there is an enhanced interest in ethical companies as people see that human-caused factors can have a such a huge impact.

There is an apparent financial benefit with ESG companies performing better.



## Trend 2

# Operational resilience

The first two decades of the 21st century have been riddled with events that have disrupted the financial services industry culminating in the recent pandemic which has thrown entire industries and even countries into a tailspin. The scope of disruptions has varied from terrorist attacks, financial crises, malware and ransomware attacks, lockdowns, supply chain gridlocks, fraud and operational risk events.

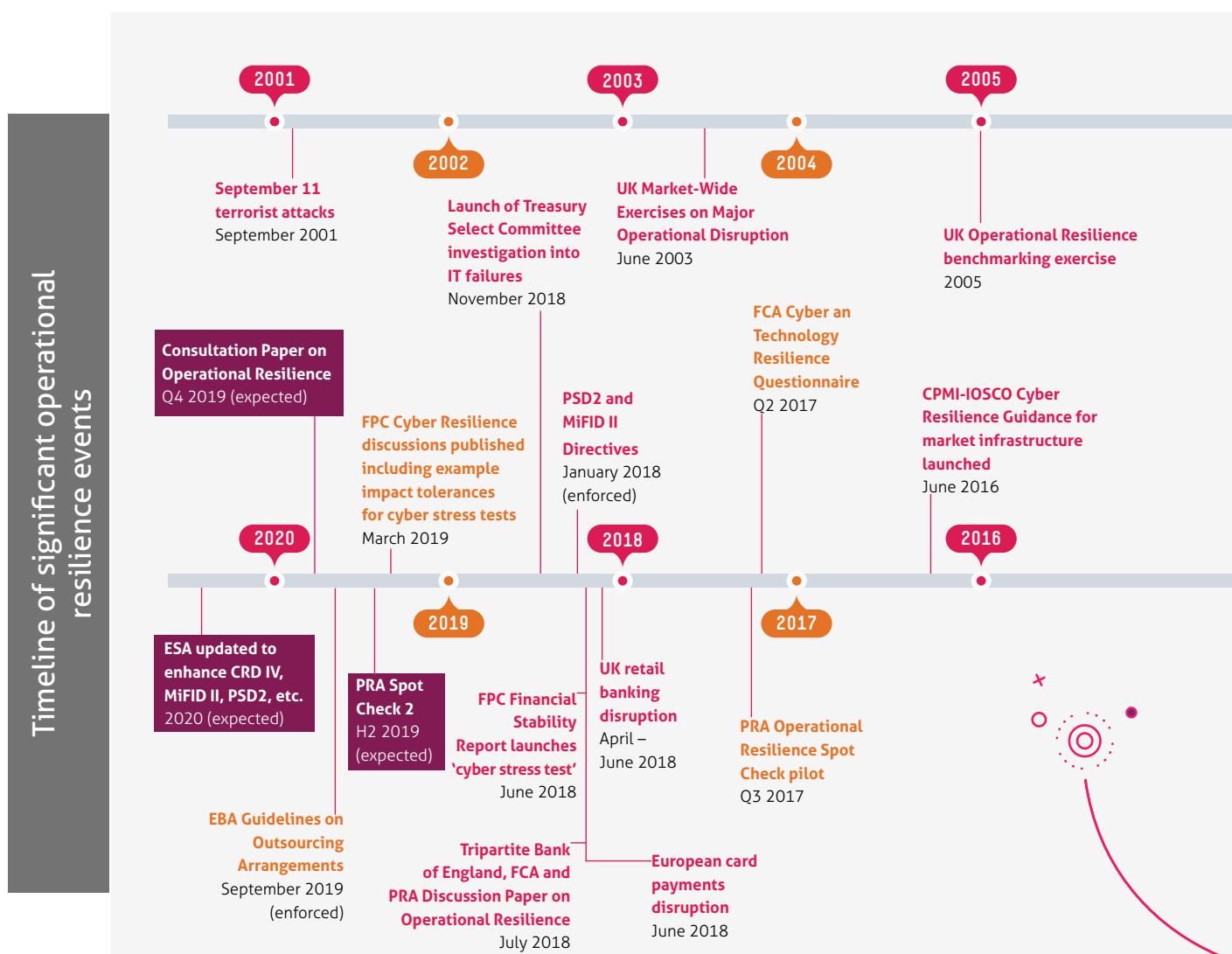
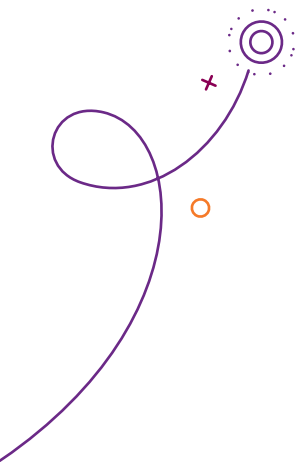
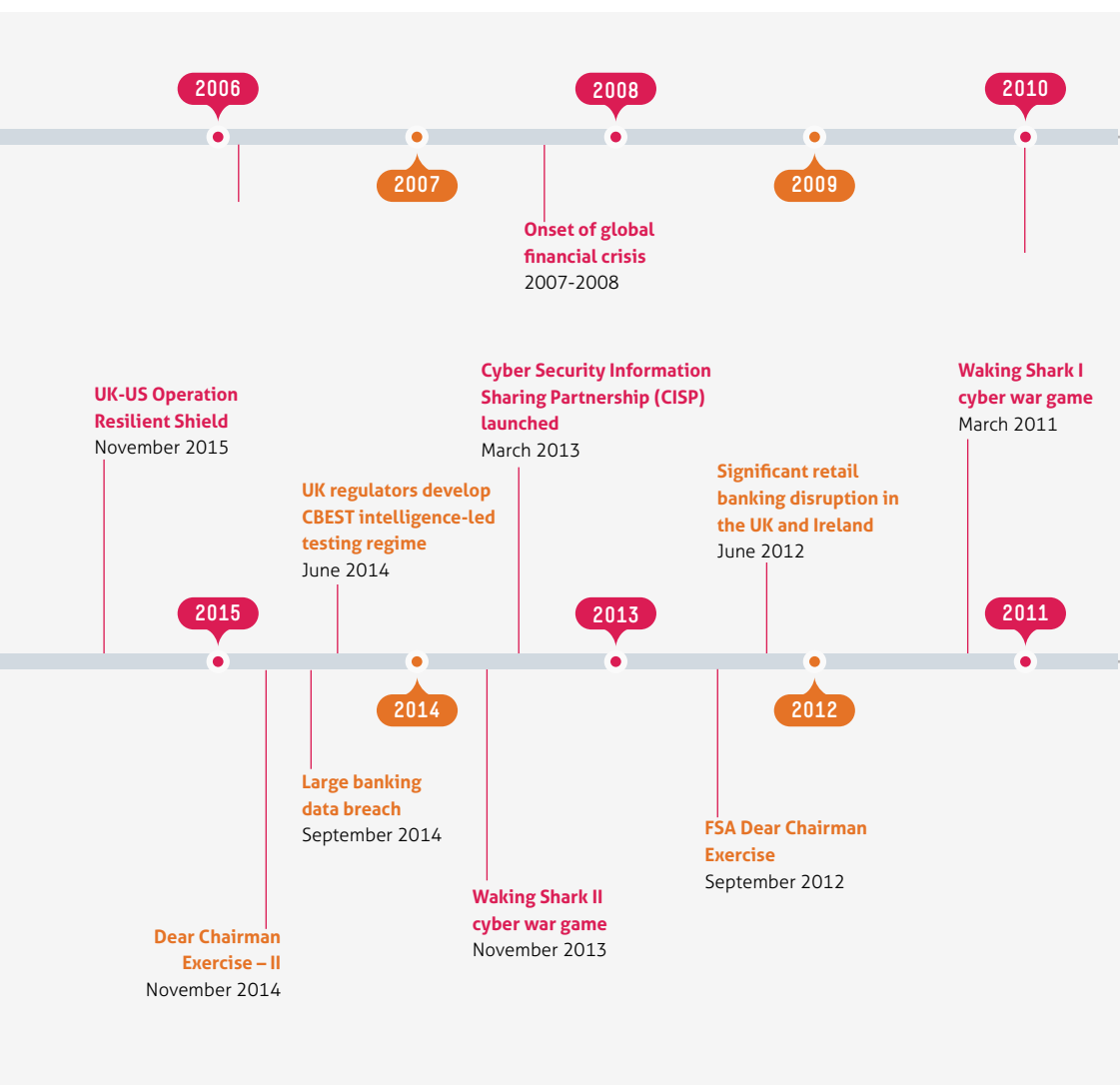


Figure 1: Timeline of significant operational resilience events



The ongoing Covid-19 pandemic has tested institutions and governments worldwide to keep the lights on for all their services and functions in spite of the challenging environment for clients, customers, vendors, employees, and management. The demands arising from the pandemic have forced regulators and firms to look beyond 'business continuity', and towards 'business resilience' covering systems, processes, and people irrespective of the external environment or internal incidents.

## What is operational resilience?

The Bank of England defines operational resilience as the ability of firms to prevent, adapt, respond to, recover, and learn from operational disruptions. In July 2018, the Financial Conduct Authority (FCA) and The Bank of England's Prudential Regulation Authority (PRA) published a discussion paper to standardize operational resilience for the financial sector. In March 2021, the Bank for International Settlements (BIS) took these ideas further and published its white paper on 'Principles for Operational Resilience'.

### Operational resilience

*It is the ability of firms and financial market infrastructures (FMIs) and the system as a whole to prevent, adapt, respond to, recover, and learn from operational disruptions – The Bank of England.*

*The ability of a bank to deliver critical operations through disruption – Basel Committee on Banking Supervision.*

The approach to operational resilience is to define a framework that covers all factors such as operational readiness, communications, review and monitoring, flexible and remote workplaces, physical infrastructure and capacity, employee well-being and productivity, offshore delivery centers, global operations, digital/IT infrastructure, legal aspects and tax, as well as financial and regulatory compliance. Within each factor, the process must cover identifying all risks and issues while planning for appropriate contingency plans. The root causes could vary from third-party failures, change management, cyber-attacks, hardware issues, human errors, IT obsolesces, data unavailability, or data loss. Banks and capital markets firms must then run periodic audits, assessments and tests of these contingency plans to align governance and streamline decision-making and communication channels.

The framework must cover governance, operational risk management, business continuity, mapping of all interconnections and dependencies, third-party/vendor dependency management, incident management, and cyber security.

A comprehensive and detailed approach to all aspects that affect the operational resilience of the firm as well as financial market infrastructure entities is the only way to enable the industry to handle disruptions of all kinds in the future.



## Key takeaways

As seen during pandemic, there may be situations where quick decisions need to be made without much information and no clear view of future. Firms require to have a governance framework that enables and allows quick decisions making at appropriate levels. Firms must identify the most important business functions, systems and critical resources to in order to continue operations if a major disruption occurs. Firms must comprehend and map important functions, internal and external relationships, concentration risks, potential sources of failure, and risk mitigation alternatives.

Business continuity planning focuses on how to recover from a disruption, operational resilience also demands thinking about how to avoid disruptions in the first place. During the epidemic, information security issues also came to the fore. Remote working needs adoption of new technology and use of personal equipment. This has increased the possibility of un-authorized access to customer or transaction data.



## Way forward

**Embedding operational resilience:** Operational resilience is not going to be a requirement but embedded in the way firms do business. This entails designing products and services to be resilient. Implementing operational resilience is not just about the individual requirements and outcomes within the policy. We expect resilience to be embedded in the way firms do business.

**Building resilience:** To build sustainability into operations, firms may have to build additional data centers to be able to transfer operations in case of failures. Firms need arrangements in case of a third-party disruption, to ensure operations as whole are not affected.

An operational resilience policy must complement and enhance existing policies such as operational risk policy, disaster recovery, and business continuity. Since there is a clear overlap between operational risk and resilience policies, firms can leverage their approaches and frameworks to meet both policy outcomes.

## Trend 3

# M&A and SPAC

In 2021, global mergers and acquisitions (M&A) reached a record high, exceeding prior year's records by a wide margin. Globally, more than 62,000 deals were declared, a 24% increase from 2020. Deal values that have been publicly disclosed have hit an all-time high of \$5.1 trillion that included the deal value of \$5 billion. This is a quantum jump of 57% over numbers from previous years. Deal volumes increased in all three major global regions compared to the previous year. Europe, the Middle East, and Africa (EMEA) experienced a 34% increase followed by Americas (22%), and Asia-Pacific (17%). The strong recovery in the global economy was reflected in these numbers.

These high levels of activity may not be seen in 2022, but all signs lead to another exciting year. These indications include high economic optimism, strong deals pipeline, capital in abundance, and companies needing technology. The activity specially in financial services has cooled down in 2022 Q1, due to factors such as deal fatigue that set in due to a rush to close deals by end of 2021, Omicron scare, high inflation making companies reconsider decisions, Ukraine war, etc. Despite this, the deal numbers and volumes are expected to be quite substantial in the remaining quarters of the year.

Despite Q1 slowdown, it is likely that the speed and volume of deal-making will rise up, since strategic trends and factors behind the push for deals remain strong. Furthermore, private equity funds have \$1.8 trillion in cash on hand, which they are keen to invest in financial sector transactions.

The current spurt of M&A activity is driven by two main factors:

- Abundance of capital available, including with PE firms
- Companies want to gain technological capabilities and modify their business models

## SPAC activity

A special purpose acquisition company (SPAC) is a public shell company that is formed with an intention of acquiring a private company and making it a public one. SPACs themselves go public via IPO (Initial Public Offering) before they identify an acquisition target.

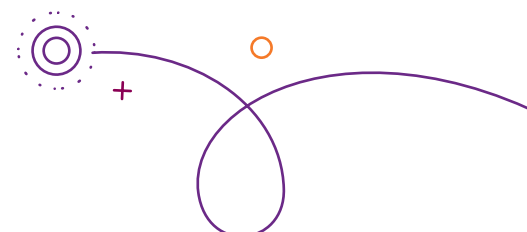
SPACs have number of advantages over other types of funding and liquidity. SPACs provide higher valuations, less dilution, faster access to capital, more certainty, better transparency, lower expenses fees, and easier regulatory norms compared to IPOs.

2021 has been a year of SPAC. This year saw a record 638 SPAC filings, raising combined \$143 billion, far surpassing 2020's 246 filings and \$73 billion raised.

More than 600 SPACs are looking out for new target companies (which is generally 18-24 months). This will carry the deal momentum in 2022.

However, due to many negative developments in 2022 such as global inflation and general market conditions not being very encouraging, deal activity has slowed down. Despite this, for many new and growing companies SPAC is a viable alternative route.

The Securities Exchange Commission proposed new regulations and amendments in March 2022 to improve transparency and investor safeguards in SPAC IPO as well as in transactions between shell companies, such as SPACs, and private operating companies. The proposals seek additional disclosures about sponsors of SPAC, conflicts of interest and sources of dilution.



## Merger and acquisition trends in

**Capital markets:** Though the first quarter of 2022 IPO and deal numbers are down compared to the previous year's numbers, further into the year the narrative and sentiment are changing. Interest rates are still historically low and companies might re-finance hundreds of billions of dollars lying in debt. With many companies integrating ESG practices and technological need rising, buyers are being attracted toward best practicing and technological niche targets.

In addition, asset and wealth management companies are in consolidation mode, with drivers such as fee compression, rising costs, product expansion, and digital transformation. Moreover, wealth management being highly fragmented makes it ripe for M&A activity.

**Banking:** Banks looking for fintechs to boost their technological capability continues. There has even been a trend of fintechs acquiring other fintechs. With banks looking to consolidate and grow worldwide, the M&A space in banking is expected to pick up in the remainder of 2022.

**Insurance:** Re-insurers have faced rough weather in recent years such as hurricanes and wildfires that have squeezed their profitability. They are looking for buyers while larger stronger companies are looking for acquisitions to increase market share and scale of operations and business. Thus, there has been a spurt of M&A activity in insurance brokerage firms driven by pandemic-related digitization.

**Private equity:** Private equity's impact on M&A is increasing. In 2021 PEs did raised and put to work record amount of funds. Towards the end of 2021, global PE dry powder was at \$2.3 trillion, 14% higher than at the beginning of the year, raising expectations on the M&A action in 2022.

With fierce competition and pressure to generate returns, PEs are expected to follow different and innovative investment strategies, that may involve large complex deals, focus on asset and wealth management firms, seeking riskier options and looking for highly innovative companies with longer investment horizons.

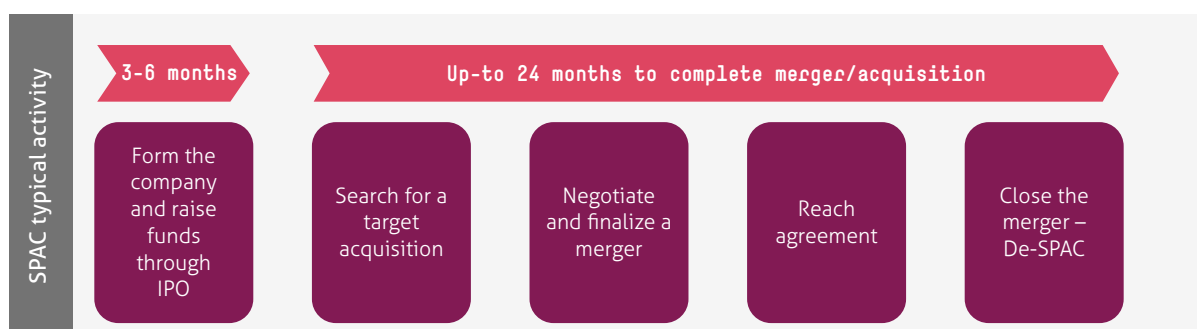


Figure 3: SPAC typical activity

## Way forward

- There are many hurdles for global M&A activities. Demerger options are being exercised by some big companies to focus on core competency, while governments are blocking mergers due to anti-trust concerns, regulatory, and anti-monopoly implementations.
- ESG (environmental, safety, and governance) factors are making inroads into M&A strategies.
- With a dynamic market and plenty of capital, there is reason to be optimistic about deal volume and valuations. Competition for targets will be fierce, since technology adaptation is now a constant demand across industries.
- Companies will aim to maintain a competitive advantage by divesting non-performing businesses and reinvesting the proceeds.

## Key takeaways

- M&A activity has slowed down in Q1 of 2022, but the market needs for technology and pressure on profitability will charge up the action in the remainder of 2022 and into 2023.
- SPACs will be increasingly monitored and regulated in coming days.
- But the SPAC merger is here to stay and with innovation and adaptation it will likely not be in its current form.
- More competition could strengthen SPACs' reputation, in effect creating a virtuous cycle where each successful SPAC drives more investor interest and start-up demand for future ones.

## Trend 4

# Post LIBOR era

As part of phase I of LIBOR (London Interbank Offered Rate) transition, since the end of 2021, publication of 24 LIBOR settings have stopped (CHF, EUR, GBP, USD and JPY) and the most used GBP and JPY LIBORS are now being published using a new 'synthetic LIBOR' methodology. As a last hurdle in the transition, USD LIBOR transition is the biggest challenge. In the phase II of the LIBOR transition journey, the market participants must now prepare for the end of USD LIBOR scheduled for June 30, 2023, and complete the legacy USD LIBOR transition by that date by engaging in proactive transition and robust fallback operations.

Market participants must also be prepared for new trading based solely on Risk Free Rates (such as SONIA-Sterling Overnight Index Average and SOFR-Secured Overnight Financing Rate). Regulators and industry working groups are unhappy about rising USD LIBOR trade, and have effectively barred all new USD LIBOR use, with the few justifiable exceptions. Firms that don't make timely transitions could face penalties that include lawyer fees, reduced access to financial markets, and reputational damage.

The data at Depository Trust & Clearing Corporation (DTCC) indicates that 33% of USD swaps with notional value of \$74 billion still refer LIBOR. Another 30% (\$66 billion) referred SOFR and the rest relied on Fed fund rates.

The Alternative Reference Rates Committee (ARRC) has decided on SOFR and Term SOFR as alternatives to USD LIBOR. The shift away from USD LIBOR has seen significant, and the trend should continue in 2022 until it is phased out in middle of 2023.

LIBOR transition strategy can be segregated into:

- The ability to offer new products, contracts, and services based on new reference rates
- The transition of legacy LIBOR transactions maturing after 2021

## Key processes and strategic areas where banks would need support

- Enhancing technology systems to allow the use of alternative rates
- Support to external technology and operation vendors so bring their systems to use alternative rates
- Transition plan for LIBOR loans with maturities after the LIBOR end

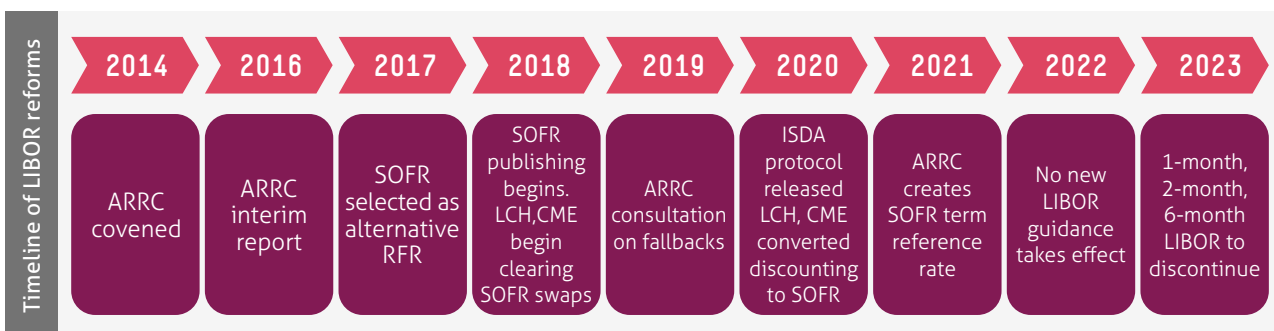


Figure 4: Timeline of LIBOR reforms

## Functional areas where banks and institutions need support to prepare their systems

### International Swaps and Derivatives Association (ISDA) protocol and fallbacks

Robust fallback language for all legacy and new transactions and ensuring that the fallback language is operational.

### Continuation of trading

No new contracts using the USD-LIBOR can be entered from Jan 2022, thus stopping the initiation of new USD LIBOR-linked products. Redesigning of processes and operating models that incorporate new RFRs such as SOFR and SONIA. Updated internal technology systems to support use of alternative rates to LIBOR.

### Back-book transition

Transitioning exposure away from USD LIBOR to RFRs for the long-dated derivative contracts and the need for parties to remove their remaining dependency on LIBOR.

### Communication, reporting, and disclosures

Communication with customers with the intention of fair market conduct and regulatory disclosure reports.

### Managing the changes

Credit spread adjustment between LIBOR and new Risk-Free-Rate to minimize the difference and to reduce or eliminate the economic value transfer.

### Learning and training

Employee and third-party training and creating knowledge repositories on transition and case studies.



## Way forward

- The magnitude of this transition means that market participants must train their employees and clients, redo their strategies, and revamp their infrastructure.
- ISDA released new fallbacks for derivatives referencing some IBORs that were not covered earlier in 2021. These fallbacks cover IBORs in India (MIFOR), Malaysia (KLIBOR), New Zealand (BKBM), Norway (NIBOR), the Philippines (PHIREF) and Sweden (STIBOR). This intended to ensure RFRs would automatically come into effect if a benchmark gets closed.
- Market participants should keep an eye on their exposure to IBORs likely getting affected in the future and consider using the ISDA protocol module. This would ensure that robust fallbacks present if an IBORs gets closed.
- The debate on EURIBOR is also ongoing, and regulators will soon start dialogue once the LIBOR closure is completed.
- LIBOR transition is not yet over by any means. Market participants must continue to actively transition away from any remaining LIBOR contracts and continue to look ahead and prepare for transition from other IBORs. Market participants must aggressively move away from any existing LIBOR contracts while also anticipating and planning for the transition of other IBORs.

## Key takeaways

- The first days of trading without non-USD LIBOR in 2022 did not cause any substantial market disruptions, in the phase I of transition.
- This doesn't necessarily mean the transition is over and during 2022 there remains a major challenge of USD LIBOR transition.
- The regulators will continue to monitor the LIBOR transition on a risk basis after 2021, as previously stated, and any new use of USD LIBOR will be under scrutiny.



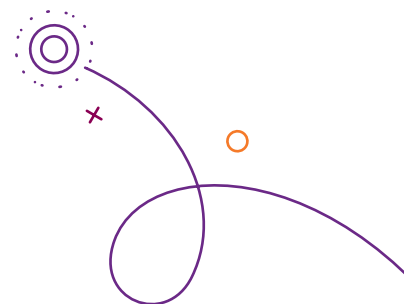
## Trend 5

# Artificial Intelligence (AI) and Machine Learning (ML)

Artificial Intelligence (AI) is a collective name for the technologies that strive to achieve the functions of human intelligence, or even surpass it. Examples of AI include predicting, learning, and reasoning, which can be augmented and scaled with the power of computer and associated technologies. Artificial Intelligence (AI) and Machine Learning (ML) are not competing with ongoing digital and cloud transformation but rather assistive and enhancing factors to these endeavors. Their adoption will help banks to collaborate and interact with other external actors such as customers, regulators, or fintechs and integrate and adapting services into product offerings and regulations while ensuring the cybersecurity and soundness of the system. Banking AI usually refers to the branches such as Artificial Intelligence, Machine Learning and Robotic Process Automation (RPA). Machine Learning is a branch of AI, generally referring to computer systems learning with or without explicit instructions. RPA is intelligent technology that uses AI and machine learning to automate business processes.

Mindtree's research shows that AI/ML is a prominent trend in the banking industry, and it is strengthening the competitiveness of banks and adding value to customer experience and product offerings. It can help boost revenues by targeted personalization of services, reducing costs by removing inefficiencies by adopting greater automation, lowering error rates, and enabling better capacity management and resource utilization. It also helps explore unrealized opportunities based on an improved ability to process and generate insights from immensely unstructured and ever-growing data. Thus, it can help banks assist in improving customer experience, which is an area where demands are continually rising.

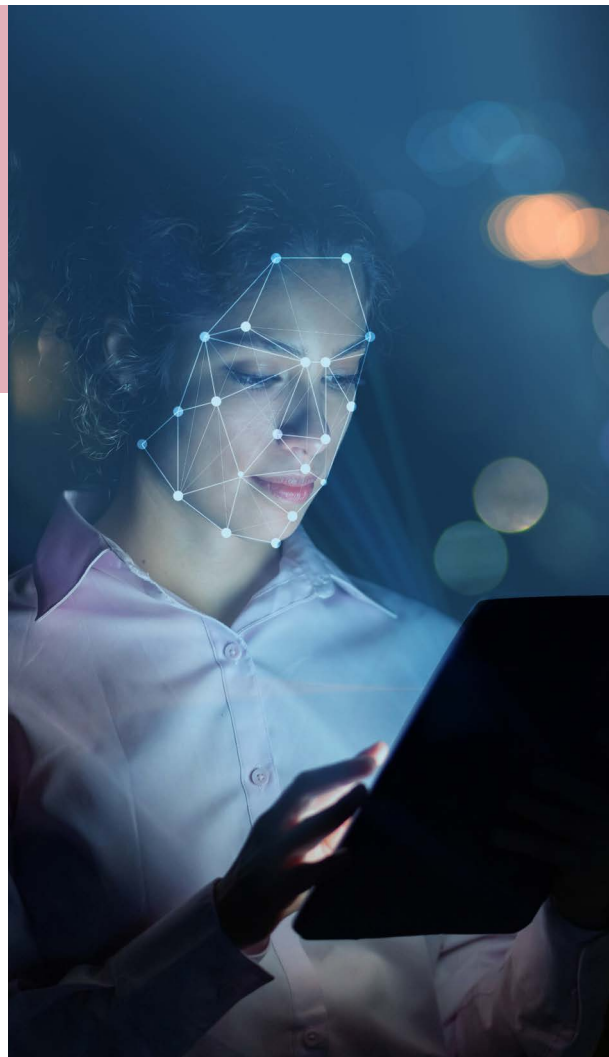
It can also assist in forecasting trends, cognitive process automation, realistic interactive experiences, better decision-making, and RPA. Banks have already successfully utilized AI applications in the form of robot-advisers, chatbots, and algorithm-based marketing.



## Way forward

Recent applications of AI/ML go beyond simple automation to discover trade patterns and forecast pricing.

- **Productivity and operational efficiency:** Through monitoring, quality checking, and exception handling of the huge amount of financial instrument data. AI can enable improved data quality to help reduce operational risks and improve client retention.
- **Client engagement and greater personalization:** Providing better client experiences through a high degree of personalization, user and communication interfaces, and by considering real-time information.
- **New products and services:** Using AI to bring in new products and services, enabling banks and financial institutions to tap into new business models and access new markets.



## Key takeaways

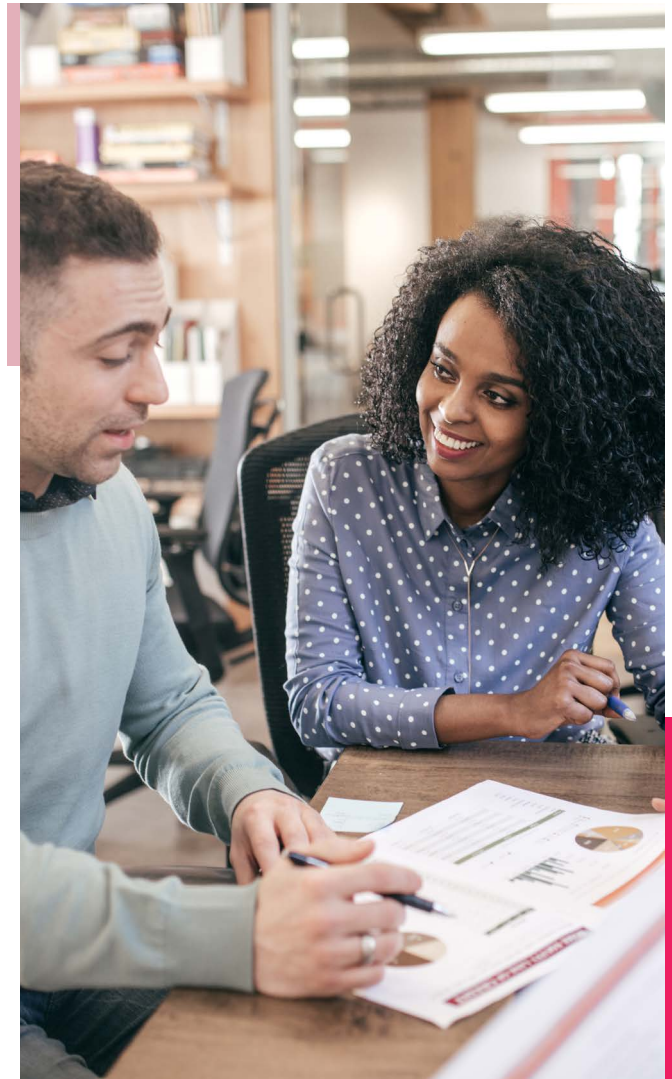
- Predictive models and better advisory powered by AI/ML has the ability to help businesses increase revenue by extending data analytics to gain better insights, delving into greater volumes of data, with better quality, and enhanced speed.
- Today, Machine Learning is being used in many areas of the financial industry, such as asset management, risk assessment, investment advisory, fraud detection, document authentication and so on.
- The ML algorithms show great potential, by constantly learning from the huge volumes of data and bringing the financial systems way closer to an enhanced level of automation.

## Trend 6

# Open Finance

Open finance or the future of data sharing is a leap forward in the open banking journey. A person's entire financial profile consisting of details like loans, credit cards, savings, insurance, pensions etc. can be accessed by trusted third-party APIs if one agrees. As a result, instead of just customers' banking accounts or credit card data, firms will be able to access customers' other utility, investment, and pension account data too.

It has long been said that data is the new gold, and today data is a subject of protection and compliance with governments putting a heavy price on it. Open finance leverages precisely this aspect to provide a gamut of financial services and take financial advice to the next level by helping clients understand aspects of money and asset management right from the seed stage extending to wealth and asset management, and finally into estate and succession planning. Consumers are accepting the role played by financial data aggregators and the services they provide through APIs as it makes personal financial management easy. Banks and fintechs are striving to be the go-to sources for financial services and to expand and retain customer relationships. The issue of security will need to be addressed carefully and seriously as this business is all about trust. Financial data, which always falls under the realm of private affairs, is now something that will be shared, courtesy of open APIs to deliver value back to the person to whom such data belongs. If there is the slightest of misuse, perceived and not even actual, it can become a subject matter of criminal jurisprudence leading to loss of face for the business. Hence, businesses will have to carefully tread this path to make the most out of this opportunity.



## Way forward

Firms will have to capitalize on the opportunity through various ways, including:

- Creating a robust API management infrastructure, with all its gateways, managers, and other developer portals for ease of data sharing that will help provide value-added services.
- Creating a solid API governance architecture to oversee development, deployment, and version control for data security and meeting compliance requirements.
- Developing a cloud plan that takes advantage of scalable architecture, protects core systems, and keeps costs in check to make business sustainable and data agile so that it can be accessed on a needs basis for its stated purpose.
- Implement a data policy to improve efficiency and compliance, which is of paramount importance to avoid legal scrutiny and win customer trust.



## Key takeaways

In the years to come, the open platform-as-a-service and data-as-a-service platforms will make inroads in the technology sphere of financial institutions. The most crucial term is 'open', and the modern era has changed the way software is developed with firms having the strategy to first buy a platform that has open-source capabilities and then add functionality based on their needs which allows customization both at the technology and business levels. The involvement of non-technical personnel in the development of solutions will be an important trend in the future, since these resources come with dynamic domain backgrounds, which would form an integral part of the entire software service delivery in the sphere of open finance. The market size is huge since and there are vast 'Assets Under Managements' to manage, 'High Networth Individuals/Ultra High Networth Individuals' to cater to, who are always looking for professional and trustworthy management of their wealth and assets for superior returns.

## Trend 7

# Regulatory, risk, and compliance

2023 is going to be a year witnessing huge changes happening in the regulatory and compliance space be it climate, cybersecurity, Distributed Ledger Technology (DLT), or ESG. There is highlighted attention to get regulatory certainty on these subjects. On the other hand, there will be a need to address the new risks coming due to the adoption of newer technologies, transformation initiatives, and regulatory guidelines. Some of the key risks listed below are climate risk, greenwashing, cloud, and cyber risks. In addition to that there is a rush to catch the ESG and sustainability bandwagon which is creating new risks along with opportunities.

## Regulatory focus

Broadly speaking, the regulatory activism going forward can be due to two main driving forces.

- Climate and ESG (environmental, social, and governance)
- Risks due to new technologies

**ESG:** With net-zero commitments from firms increasing, regulators will step in to support ESG-related disclosures and taxonomies.

**Climate risk:** This is a focus area with the Financial Stability Board, International Organization of Securities and Commissions (IOSCO), International Association of Insurance Supervisors, and Financial Action Task Force (FATF) who are all involved in creating a huge amount of regulatory work in this area. Climate risks have the potential to generate financial risks, and industry needs to disclose and manage the risks.

**Risks from innovation:** There is increasing complexity of financial ecosystem with technological advancements. With many unregulated technologies coming into play, like Defi, NFT (Non-Fungible Token), Crypto, etc. This is blurring the lines between unregulated fintechs and regulated firms.

There is a large supervisory focus on operational and technological resilience arising out of this situation.

**Digital assets:** Crypto, NFT, and stablecoins largely remain outside of regulations. A coordinated work on stablecoins is happening at through Financial Stability Board (FSB), Committee on Payments and Market Infrastructure (CPMI), and IOSCO.

**Financial crime:** More action is expected on Anti-Money Laundering (AML)/ Counter-Terrorism Financing (CTF) processes, as fraudulent activity is in focus due to covid-related operating models.

**Operational resilience:** There will be greater emphasis and responsibilities thrust on firms and board members to act responsibly regarding operating resilience and risk management.

There is increased complexity due to client focus, many third-parties, and technological service providers being involved. Thus, there are new vulnerabilities for which risks need to be managed.. It is a challenge to understand where the risk lies for regulators.

In the EU, the Digital Operations Resilience Act is encapsulating these areas. In the US, APAC, and elsewhere there is strong push towards information security and cybersecurity.

## Functional areas where banks and institutions need support to prepare their systems

**Climate risk:** Climate-related economic impacts are already visible and are expected to accelerate in coming years. Banks and their loans are exposed to climate risks related physical damage, property damage, borrower business operations disruptions etc. due to extreme climate phenomenon such as hurricanes, floods, wildfires, and droughts as well as due to moving towards a carbon neutral economy, such as reduction in borrower's fossil fuel businesses and reserves (also referred as transition risk). Financial services regulators worldwide are moving to ensure banks identify and quantify the risk exposures from climate change and establish strategies and adjust business models to manage them.

Climate-related stress tests are being conducted by UK and French regulators. Central banks are incorporating climate risk factors; for instance, the Bank of England is now taking environmental sustainability and the government's 'net-zero economy' goal into consideration when purchasing debt. The US Federal Reserve Bank is also said to be considering similar studies and actions. Banks are expected to incorporate climate risk in their risk management practices.

But banks still lack the established KPIs to measure, map, align, and assess the impact of climate risk on their financial statements.

As a result, banks need to intensify their assessment efforts on how their lending activities affect their own risks and profitability. Similarly, the assessment efforts of their clients' contribution to climate change and climate risk must also increase.

For Banks, climate considerations must be an integral part of financial risk management, with the aim of treating climate risk as a financial risk and not just as a honorary or reputational one.

**Greenwashing:** Greenwashing is a marketing and business tactic of manipulation, misrepresentation, and misinformation to capture customer confidence around a firm's commitments and efforts to support environmental, social, or governance (ESG) causes.

Issuances of sustainability-linked debt are increasing. Companies are rushing to take advantage of both opaque and lax regulatory requirements and the increasing investor demand for ESG-related products. There is uncertainty among investors whether the current KPIs are sufficient to gauge the sustainability of a company. Thus, there is a heightened need for cautiousness, scrutiny, and regulatory guidance. With ESG and sustainable finance markets taking off, greenwashing suspicions are also growing. Thus, banks must acknowledge and record this risk, and work to mitigate and avoid it as it can potentially lead to legal, reputational, regulatory, and financial risk.

Apart from embedding ESG factors into risk frameworks, financial institutions must consider ESG-related issues while doing product design, pricing, and sales contracts.

**Cloud risk:** Cloud risk gives rise to a plethora of other risks which are too grave to be ignored for a bank. Thus, banks must have highlighted attention on the resultant risk as they slowly migrate towards cloud.

**Outsourcing risk:** Moving services to the cloud delegates some risk management responsibilities to a third-party cloud service provider (CSP). However the responsibility for actual risks remains with the company, not the CSP. Therefore, the operational risk management framework of a company must factor-in the special situations arising due to cloud service adoption.

**Cyber risk:** This is something that demands special attention. Strict cyber security is required. The threat of intruders hacking into IT systems and gaining access to data through internet, or a closed system has compelled businesses to tighten security. .

**Compliance risk:** Some data security regulations are meant to safeguard a specific type of data. For example, Payment Card Industry Data Security Standard mandates anyone who accepts credit cards to protect cardholder data. Companies covered by these regulations are required to protect the data, to know where the data resides, who has can access it, and how it is protected.

When you employ a cloud service, you run the danger of losing control because the vendor is in control. There is no guarantee that price for the features you use today will be maintained at current level; the vendor can increase the price phenomenally, and if you and your clients are depending on that service, you will be constrained to pay. Availability risks put the business and clients at risk.



*"For banks, sustainability is not just an ethical, but may soon enough also become an economic and existential question — generating a new type of risk: ESG risk. Banks ought to approach ESG risks in a holistic fashion when embedding them into their risk management frameworks. This process includes adjusting business and risk strategies and corresponding risk appetite statements, making sure roles and responsibilities are fully transparent throughout all three lines of defense."*

– KPMG report 'ESG risks in banks 2021'

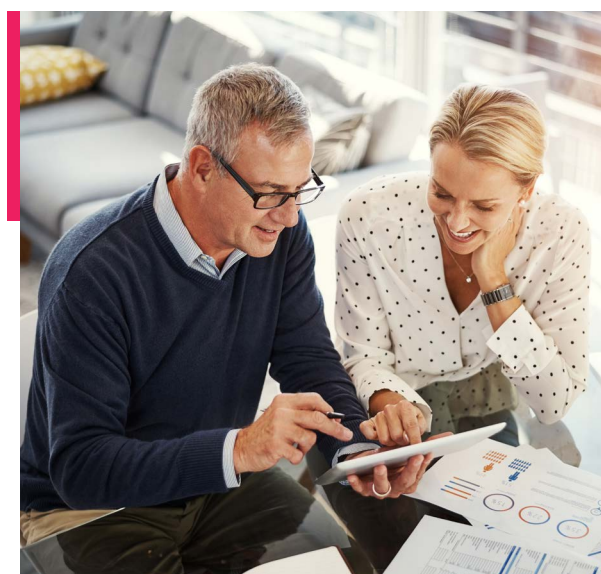
**Distributed Ledger Technology, digital assets and Central Bank Digital Currency (CDBC):** It is now widely believed and acknowledged by regulators that the implementation of DLT in capital markets has the potential to enhance efficiency, smoothen post-trade processes, and reduce costs for all engaging parties. At the same time, regulators and supervisors have also encouraged participants to address the concerns of interoperability, governance, privacy, cyber security, and scalability.

Due to the sophisticated nature of the technology, often tarnished with the crypto-related fraudulent activities, issues related to privacy, anonymity, and cybercrimes need to be prioritized before its successful adoption in capital markets. Other risks, such as operational and technology concentration risks and their mitigations should be redefined in the DLT context. Risk to fair competition, information symmetry, market interconnectedness, and liquidity risk must also be deliberated and documented from the beginning. In most cases, the risks associated with clearing, settlement and payments carry a similar probability and consequent outcomes irrespective of whether it is on a single central ledger or a synchronized distributed ledger. That said, DLT may give rise to new forms of risks, including:

- Untested operational and security issues with technology which might arise only with scalability
- Interoperability issues with existing legacy infrastructures and interfaces
- Lack of regulatory and legal certainty on settlement finality
- Legal, contractual, compliance, privacy, and consumer-related issues of DLT implementations
- The absence of a globally accepted standardized and robust governance framework
- Issues with data sharing, interoperability, integrity, immutability between DLTs.

**Cyber security:** Increased reliance on the digital system and processes, pace of digitalization, and the adoption of untested technologies creates insider and outside vulnerabilities for the organizations. Banks and financial institutes already have sophisticated cyber security systems in place but due to third-party vendor products, API exposure, and increased coordinated attacks, the sophistication itself becomes the point of failure for cyber security. Banking and finance websites and applications which interact with the external world are the entry point of cyber-attacks and thus pose a great weakness in the larger network architecture and overall cyber-reliance.

In addition, due to the new ways of working such as work from home arrangements, there are greater cyber risks as evident from data in the recent past. A cyber security breach can occur in multiple ways such as social engineering, phishing, data breach, DoS attacks, sybil attacks, virtual private network (VPN) exposures, interruption in trader surveillance, etc. The prevention, early detection, and remediation once exposed are the key areas where organizations should focus to fortify their systems from cyber-attacks.



## Way forward

As we progress, society will have bigger needs and social expectations with the financial services industry.

Firms must adapt and mature to operate in a significantly more complex environment, resulting due to evolving technology, global fragmentation, environmental and other issues. .

Regulation and regulatory bodies are facing ever-increasing pressure to drive the changes as well as regulate and control the whole eco-system.



## Key takeaways

Moving into 2022, financial services will need to implement all the tail-end regulations of the post 2008 regulatory scheme. There is a big shift in regulatory themes with a focus on climate, sustainability, digitization, and operational resilience areas having become critical and time-sensitive.

Regulatory bodies of all the world's regions are responding to these developments and expectations.

These new regulations will create both opportunities and challenges. Firms need to devote more time to strategic planning and long-term implications of forward-looking policies.

The regulatory priorities may have changes but the volume and pace are constantly increasing.



## Trend 8

# T+1 Trade settlement cycle compression

At a time when markets are evolving and accelerating at a dizzying rate, the upcoming change to a 'T+1' trade settlement cycle is a key milestone for the US financial services industry. This will be a significant shift with far-reaching implications for capital markets firms, asset managers, wealth managers, and other market participants, who will need to adapt their systems and technological infrastructures to T+1, posing costs and challenges that could far outweigh those associated with previous moves to T+3 and T+2. In addition to operations and technology, the transition will have an influence on funding procedures, revenues, and balance sheets.

In retrospect, the industry transition from T+5 to T+3, and even the 2017 shift to T+2, can be considered gradual gains, although being innovative at the time. Companies will meet the demands of a shorter cycle by speeding up current operations. The transition to T+1 will be very different. Manual operations and activities may well be nearing redundancy with a round-the-clock settlement window. It will necessitate automation throughout the trade lifecycle and across a wide range of services, from trade matching/affirmation and batch processing through stock loan processing and asset servicing. Any manual inputs or interventions within the reference and static data will have to be eradicated across the company, and procedures will have to be automated. Even as these improvements are implemented, companies will need to maintain high levels of IT investment in order to include future technologies like AI, Blockchain (DLT), and cloud, which will deliver important efficiencies in both the T+1 and T+0 environments.

The other critical aspect of this entire move into a compressed settlement cycle that cannot be ignored is that it will have implications not just within the boundaries of the country it is being implemented, but also cross-border repercussions due to the globalized nature of trades with the same set of investors investing across the globe. A good example to cite would be that an Asian investor's US trade will require an FX transaction, and the FX market being on the T+2 settlement cycle would cause a disconnect between the security and its related FX component, which will have to be factored in. Moreover, time zone considerations will lead to an almost round-the-clock operation-servicing channel to be put in place. All this would involve scaling up the technology infrastructure considerably across the entire trade lifecycle.



## Way forward

A T+1 settlement cycle will have benefits ranging from increased post trade efficiencies, cost benefits and reduced risk for market participants.

- With the main benefit of reduced time settlement time, it reduced the and frees the capital that is held up as a collateral to the trade.
- The T+1 reduces the unsettled outstanding trades at any given point of time. This will effectively reduce the exposure of clearing companies.
- It will lower the capital that is blocked to cover the trades as there will be reduced number of outstanding trades.
- The systemic risk is also reduced as there is lesser time between trade execution and settlement.

Along with stated benefits comes a responsibility where the industry has lot of work to do in the functional and operational areas to update, enhance and modernize their legacy and internal systems.

Allocation and affirmations – A shorter allocations and affirmations timeline must be set. Currently in most markets the larger part of allocations and affirmations happen next day of the trade. This has to be brought down to trade day. Improve the legacy and internal systems to complete allocations and affirmations by new target times. The Prime brokerages also look to enhance their systems to cater to reduced timeline for allocation and affirmations.

**Documentations:** There are different documentation like transactional, administrative and agreements. The firms must move towards more electronic documentations and e-deliveries.

Global market settlement and FX – The international spot FX settlement being at two days, may cause funding, collateral and liquidity issues. Engaging with global banks, payment and settlement players, infrastructure providers and industry groups to bring about systemic and behavioral changes is necessary.

**Corporate actions:** In a T+2 settlement cycle, the ex-date is on the trading day before record date. In a T+1 the ex-date moves to the record date of the corporate action event. Firms must adapt and develop uniform corporate action process to cater to the changes – like usage of SWIFT messaging, Standardizing Security Payment Order (SPO) integration, vendor solutions etc.

**Securities lending:** In a T+1 settlement cycle, the loaned instruments that must be recalled by the lender need to be identified in a shorter time. Current timelines and deadlines for stock lending and recall processes must be changed. Vendors and firms must coordinate, and set up streamlined processes to cater to the compressed timeframe.

**Trade fails:** Trade fails due to errors, missing information or lack of positions do keep happening. Firms need to adopt standardization and automation of processes – to keep reference SSI information updated in a timely manner, cancel and rebill processes, memo segregation for intraday trading etc. Market participants should update policies and procedures related to their funding and inventory management practices. They should bring in controls to reduce manual intervention in cancel and corrected trades.

**Regulatory impacts:** As we move towards T+1 settlement cycle, the regulatory agencies must review and re-establish current rules and regulations that are made with T+2 in mind. These rule changes, compliance and timeline changes will result in good amount changes in firms' processes and internal systems.

## Key takeaways

Trade transactions between buy-side firms and their broker-dealers include a substantial degree of risk exposure due to trades being not collateralized and not guaranteed. The scale of market risk is a function of time and volatility; therefore, it rises as the settlement cycle lengthens. The National Securities Clearing Corporation (NSCC) guarantees street-side transactions between broker-dealers on an exchange, but clearing firms cover this risk with their deposited clearing fund corpus. When compared to a shorter cycle, the implications of mark-to-market and volatility raise clearing fund requirements in a longer duration settlement cycle. Systemic risks are looming around the corner, as proven by the financial crisis and past events. The number of unsettled trades at a given time and the concentration of risk impact systemic risk. Risk concentration, whether at correspondents or central utilities like NSCC, becomes a more pressing issue as the volume of outstanding transactions grows. Transitioning to shorter settlement cycle will necessitate a few changes across the industry: operational changes affecting processes and staff behavior across various industry frameworks and modalities; technological and infrastructure additions to service the enhanced operational requirements; and also, the overall market infrastructure enablement that can work.

## Trend 9

# Cloud and digitization

The pace at which the digital and cloud transformations are taking place and reshaping the technology offerings and customer experiences of banks is unprecedented. We believe that the same will continue in 2023 as well, even with accelerated speed. There are various approaches to digitize existing legacy architecture; serverless computing, containerization, and re-platforming are a few common ways enterprises are constructing cloud-native apps.

**Serverless computing:** This can help you be more agile in your business by allowing you to try out new goods, services, technology, features, and business models. It enables create and run applications and mounted services by removing infrastructure and environment management duties including server or cluster deployment, patching, upgrades, OS maintenance, and capacity provisioning. The utility of a serverless set-up is even more prominent when the utilization capacity is burdened significantly and unexpectedly, automatically load balancing, instant tuning, and scaling to address the load requirements. The benefits it offers are increased availability, effortless scaling, dedicated focus on functionality, and lower need for maintenance.

**Containerization:** These are the utilities to provide a developer in order to standardize, combine, package, and deploy the code changes, configurations, dependencies, and linkages into an independent portable object. Containers ensure portability and plug-and-play solutions for applications if required to switch between environments and infrastructures. Building and deploying microservices, executing batch processes for Machine Learning applications, and transferring systems to the cloud are all frequent uses of containers. The benefits it offers are increased objectivity, consistent operations, and enhanced developer productivity.

**Cloud-native re-platforming:** The re-platforming approach consists of lift and shift of the existing

application or IT infrastructure to a new mold and shape. Thus, creating a new platform to achieve the enhanced offerings. With the emergence of cloud solutions, the most popular re-platforming is to move the infrastructure to clouds. Changes in the way a program interacts with the database and server are common changes made while moving to cloud so that there is benefit from the cloud's scalability, tolerance, load balancing, and greater availability. This approach frees up the redundant and costly on-premise infrastructure and allows one to focus on custom or higher value-added services for the business.

### Key factors driving the change:

**Open banking:** Due to new business opportunities harnessed and proven by fintechs with regulatory demands placed by regulations and directives such as PSD2 and XS2A, banks will have to reimagine their conventional operating models, opening their offerings and assets to meet the ever-changing marketplace which is increasingly becoming customer-centric. This also opens up avenues to utilize the power of APIs and microservices.

**Access to new technologies:** Solutions such as cloud and DLT are now being leveraged for their cost-effectiveness and efficiency as well as the fact that these technologies are offering new business opportunities and providing a competitive advantage and revenue streams to the organizations. Challenges from innovations and fintech: Fintechs in finance are threatening the competitiveness of banks. In digital banking we see the use of Apple Pay, Samsung Pay. The focus in most instances is to shorten implementation time, respond faster, reduce costs, improve engagement, and make banking easier. Other factors such as cost savings, increased resilience, reliability, availability and throughput, security and compliance including checks on access, vulnerability, compliance verification and penetration testing, as well as increase in agility.

## Way forward

Data seems to suggest that banks and asset managers are in a nascent stage of cloud migration. Currently, there is very limited cloud usage is seen in front office. Most of the applications in sell-side are in risk and those in buy-side are in data analysis.

Migrating to the cloud also needs data connectivity improvements and some fundamental infrastructure changes.

But the cloud journey is expected to continue, with larger and forward-looking firms moving towards cloud with more enthusiasm and realizing the benefits such as security, data access, etc.



## Key takeaways

The cloud presents a huge opportunity. It is not just about cost savings but also more prominently about creating an open architecture enabling firms to be more agile and flexible. It's not only about cost savings; it's also about establishing an open architecture that thus firms that are agile and flexible.

Some of key areas where cloud is has great potential as a differentiator are:

- Cost reduction by moving away from own data centers to cloud infrastructure.
- Agility and scalability as firms can set up new products or processes with quicker turnaround time, so also respond better to expand capacity.
- Better data access compared to legacy or own systems, big computing power and vast data access capability cloud helps with better data access and faster data processing and analysis.
- More transparency as pooled data access is doing away with data silos, thereby providing firms a larger picture of clients, assets, and opportunities.

Firms can innovate rapidly and efficiently thanks to the cloud. With hybrid cloud that combine public and private cloud solutions, firms can move towards cloud more confidently.



# Distributed Ledger Technology (DLT)

Though today's global financial market infrastructures provide for safe and secure flow of assets, money, information, and value across markets and regions. But the current system has many limitations, and distributed ledger technology presents an ambitious opportunity to re-define and upgrade market infrastructures in order to address age-old operational issues. Distributed ledger technology (DLT) has proven potential to disrupt payment, clearing, settlement, issuance, custody, and other such services. Thus, industry should explore the benefits of technology in the multiple areas of capital markets where it can give instant results such as reference data management, bonds and security issuances, tokenization of custody services, trade confirmations and validations, micro-payments, liquidity pool generations, clearing and settlements, nettings, collateral management, etc.

The existing technology stack of clearing and settlements, payments, digital identity, corporate actions, reporting and compliance, and collateral and ownership transfer can be restructured on DLT to achieve more efficient post-trade processes, enhanced reporting and oversight, greater resilience and availability, reduced counterparty risk and enhanced collateral management and reduced costs.

Some of the areas of capital markets where DLT is in advanced stage of implementation:

**Settlements:** The benefits of adoption of DLT in the settlement space range from reduced costs (reconciliation, matching errors, etc.), speed up

settlement (quick and reliable validation), high resilience (high fault tolerance, no single point of failure), increased transparency (auditability, open accessibility), efficient reconciliations, etc. Shortened settlement times significantly reduce market and credit risk and margin requirements, which gives opportunity for the efficient allocation of freed-up capital and saved time. In the current state, every transaction passes through several intermediaries, each one maintaining their own data in silos, this gives rise to a widespread nuisance of data multiplicity and duplicity, resulting in reconciliation and transaction disputes elongating the settlement cycles. One of the key benefits of introduction of DLT in settlement space is the resultant shortening of the settlement cycle. This is helpful in multiple ways such as:

**Collateral management:** DLT can solve new collateral requirements and allows one to tap into unused assets, reduce operational complexity and overheads, enhance efficiency and flexibility and automating the flow of initial and variation margin.

The implementation of distributed ledger technology (DLT) will speed up transaction clearing and settlement to almost real-time levels, thereby minimizing manual and recon-related bottlenecks, decreasing risk-weighted assets, and achieving capital efficiency for parties. On the other hand, the post-trade processes can be significantly simplified, the operations and back-office processes will be optimized, and manual intervention is reduced significantly. However, the experiments and proof of concepts of the DLTs usage in clearing and settlement has produced mixed results. The barriers related to the lack to the standardization, regulation, and scalability solutions need to be addressed before large-scale adoption can be realized.

**Confirmations:** Confirmation of the contractual attestation of the trade is a tedious process in the current implementations. It involves the scanning of the key trade attributes on an agreed template and exchanging and acknowledging that amongst the parties after. It involves the complex linkages between trading, legal, documentation, communication exchange, interfaces, etc. If the DLTs promise of trust and transparency (e.g., with a golden common data source) is implemented on a common ledger then the same thing can be achieved by bypassing all the above subsystems and intermediaries. This will significantly reduce costs (due to reduced data entry duplication and reconciliation errors), strengthen resilience and reduce operational risk, and enable efficient and reliable management of the data flow. In brief DLT addresses the below key problems to achieve this:

**Resolving issues of trust:** Trading parties, market participants, and service providers often have divergent or competing business interests. Thus, establishing trust amongst them though desirable is inherently antagonistic. In a DLT implementation, each party acts as an independent node, they can have equal access to data, so they can collaborate to achieve the bare minimum trust to sign the confirmation agreements. The same can be achieved with an efficient consensus protocol. This leads to strengthening of trust because each party is aware that no single party can temper or alter the data.

**Unequal access to data:** In the entire security and asset ecosystem, there is a lack of a single 'golden source' of master and reference data. This can lead to players venturing for different means to collect data which render unequal access to all the parties. Blockchain allows controlled, common, and secure data sharing allowing each participant to have access to a combined data pool.

**Inefficiency:** Lack of a single data source gives rise to multiple to and fro reconciliations, manual verification processes, operational risks, and slowness in the transaction movement. With use of DLT, near real-time settlement and confirmation can be achieved. Programmable codes called 'smart contracts', could streamline, or automate the manual and routine aspects of transactions, sub-transactions, regulatory reporting, etc.

**Democratization:** Democratized access to data, information and assets would benefit all parties. Issuers would be able to diversify the sources of funding, end-investors would benefit from transparency, market-based pricing, and portfolio diversification, even the SMEs and small investors would be benefitted by micro-services enhanced financial accessibility.

**Market disintermediation:** Market participants who act as the intermediaries for financial services such as central depositories, reporting repositories, clearinghouses, security exchanges, brokers, clearing members, custodians, prime brokers, investors, market makers, asset managers, dealer/brokers, corporate and retail banks, transfer agents, and liquidity providers can either be entirely bypassed or be efficiently aligned with the use of the decentralized ledger technology. The implementation of this technology can offer the following opportunities:

- Internal ledger synchronization. (transactions/messages/bookings/transfers/allocations/payments).
- Transform post-trade processes such as asset/securities/issuance/capital booking and transfer.
- Digitize and automate the existing manual processes, security issuances, tokenization of illiquid and illiquid assets, confirmations, settlements and payments.

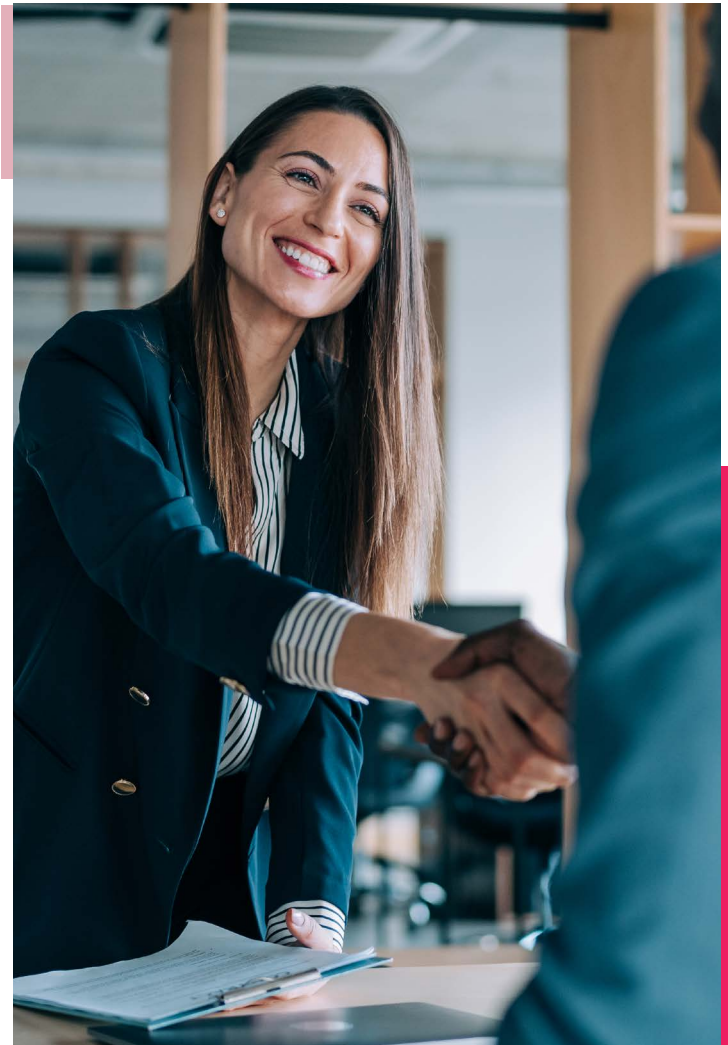
**Clearing:** Clearing and settlement of derivatives involves numerous manual processes and cumbersome facilitative activities including the daily valuations, exchange of recon reports and variation margins, sharing interest on the margin-naming PAI (price alignment interest), maintenance of audit and ownership records, and arrangements of cross-system margin obligations. With the advent of the UMR regulations, the clearing and risk management of OTC derivatives has become a costly affair due to collateral, valuation, capital, and regulatory requirements. DLT with the usage of tokenization and smart contracts could optimize the pricing and margin calculations efficiently, thereby realizing financial cost benefits for market participants. Finally, on the payments front, DLT can be utilized to carry out seamless cross-border transactions in a fast, reliable, and cost-effective manner.



## Way forward

DLT is seen as revolutionizing the a plethora of functional areas from end-to-end for the capital market/asset management participants. It will:

- Replace the current post-trade landscape (involving Central Securities Depository and/or clearing house) with a DLT-based system
- Embed a DLT-based system in the existing post-trade infrastructure for a specific set of use cases by mutualization of certain workflows – such as automating settlement instructions and/or corporate actions processes, reducing settlement risk, enabling flexible settlement time-frames.
- DLT-based end-to-end platform encompassing issuance, trading, post-trade and servicing of digital securities.
- Issue securities as tokens on a secure public or permissioned distributed ledger, enabling trading across multiple digital exchanges.
- DLT-based fund distribution platforms that aim to link various institutions involved by a single source of truth to streamline operations by automating fund registers, sharing KYC/AML information, transaction processing, data sharing, etc.
- DLT-based solution based on a shared source of truth across the full fund lifecycle enabling fund creation, fund administration, and fund servicing, with a goal of streamlining fund operations by mutualizing workflows across participants.



## Key takeaways

There is going to be substantial push of market participants in capital markets towards usage of DLT, with regulatory support and technical developments.

After years of experimentation, many DLT-based use cases in capital markets are functioning live.

The fundamental problems in capital markets that DLT is attempting to address are genuine and significant.

While greater digitization is inevitable, there could be many challenges in adopting DLT solutions, such as the need for significant change to business operating processes, connecting to legacy systems, and regulatory uncertainty.

## Trend 11

# Re-imagining operating models

The impact of Covid-19 on capital markets exposed stress points for both the buy side and sell side players which served as a catalyst for transformation initiatives. It also forced capital market intermediaries to re-imagine their operating models to be more value driven with greater automation, as well as data-driven, supported by cutting-edge technologies like cloud, distributed ledger, intelligent automation, and AI/ML. In the asset and wealth management space, we see the following impact from the pandemic:

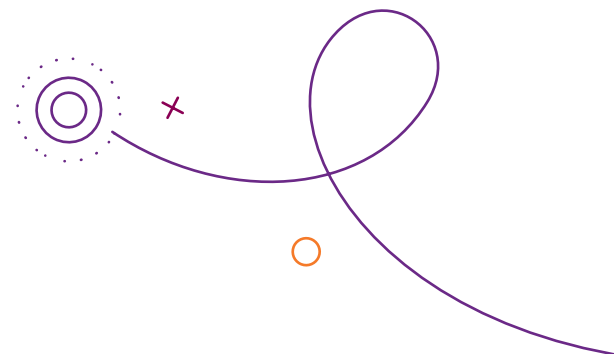
- **Fee compression and AUM reductions** continue to be challenges for asset and wealth management.
- **AMCs must reinvent customized products and services** to meet the needs of millennials.
- Firms must strengthen **digital distribution by virtual selling and relationship management**.

And the signs of resurgence we see are:

- Increased focus on managing the **credit Risk, Financial Crime (CFI) and regulatory** requirements.
- **Proactive customer engagement** with theme “active interference” and “frequent trading”.
- **API** technology is being **embraced** in a big way to connect internally and externally with fintech and other **service providers**.

The aforesaid context puts even greater pressure on capital markets firms to transform their operating models. What we are witnessing in the market is that the four transformation pillars will guide firms towards new target operating model. They are:

- **Business-focused innovation:**  
Enabling continuous, agile business innovation setup to reduce time to market.
- **Experience transformation:**  
Drive human-centric product and service experiences across the ecosystem.
- **Insights-driven enterprise:**  
Accelerated modern data platforms and AI solutions to reduce cost per insight.
- **Cloud & API first modernization:**  
Technical debt reduction with scalable and cost-efficient modernization.





## Way forward

Traditionally, banks and financial institutions have built products and expected customers to come to branches and offices to get services.

Instead, firms need to evolve to customer-centric cultures where everyone is focused on solving issues for better customer outcomes and serving customers whose requests are pending.

Agility and resilience would be key goals while adapting to the ever-changing business environment and the need for ongoing service delivery.

Hybrid working is a new 'Normal' for many firms. Making this hybrid model work effectively will be the ongoing challenge throughout 2022.

In the medium term, office space configurations will be driven by the goal of workforce flexibility. Financial institutions will need to continue experimenting to find the most effective work environments.



## Key takeaways

An operational model is the bridge between a firm's strategy and operations.

Post-pandemic, all indications show that an operating model based on a hybrid working model is here to stay, attempting to reap the benefits of both worlds of remote work efficiencies and office work synergies.

Once implemented, an articulated operating model can result in positive changes, such as improved business performance, better connection and coordination with stakeholders, increased process integration, and faster decision-making in times of disruption.



# CONCLUSION

Technology has proven to be a key catalyst in inspiring innovation and evolution in the capital markets arena to cater to new regulatory, data, and investor requirements. This has led to a paradigm shift in the way financial institutions run. Digitization is the buzzword, and one can easily say that the modern world is subject to digital Darwinism or digitization to survive as the fittest in the technology era. Success will be driven by the rapid adoption of technology to leverage existing data, protect that data, and comply with the law of the land. Digital data will help businesses gain deeper customer insights, and automation in various forms will help cater to those insights and demands. One can also see that all these trends are interlinked with each other and do not operate as silos. Hence, the blossoming of one will also lead to the others following suit.

The capital raising by new-age tech firms across the globe has resulted in a paradigm shift in capital markets. Such companies have investors with deep pockets who have poured a deluge of funds into banking on new-age technology driven by increased customer insight both in the B2B and B2C markets. This has affected all spheres of our day-to-day life where the common person has begun to adapt technology to do things hitherto done physically, be it food tech, EdTech, or IoT (Internet of Things).

If one glances at the post-pandemic world, it is clearly visible that a new stratum of society has emerged as consumers of services, who are impatient, not risk averse, and willing to explore new ideas and solutions. A significant chunk of business is going to come from this nascent demographic which businesses will find hard to ignore. Traditionalists will continue to adapt and evolve to do business in the digitized era striving to create value for the stakeholders involved. Hitherto, commoditized business has paved the way for something more unique, and a place where customized solutions are offered. In this scenario, technology will be the key differentiator, as has been seen from the astronomical growth in new-age tech giants, fondly referred to as FAANG!





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## About Mindtree

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