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The WFE 2020 Series: Vikram Limaye, Managing Director & Chief Executive Officer, National Stock Exchange of India Ltd (NSE)

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1. **As we kick off the year 2020, can you please look further into the future, and share your predictions on what the Indian market infrastructure industry might look and feel like by 2025?**

India aspires to be a $5-trillion economy by 2025. The Indian market infrastructure industry will witness targeted modernisation. The industry will make pragmatic technology choices not driven by short-term needs but rooted in delivering business outcomes. This will help the industry strike a balance between delivery agility, architectural complexity, and changing business needs.

It will apply agile principles to application integration delivery and platforms and use contract-based design and life cycle management for event-driven APIs, as for REST APIs.

It will build automation into application and integration platforms to streamline observability, incident response, regulatory policy enforcement, and IT security of modern distributed architectures.

There will be an inexorable march to the public cloud, rapid growth of cloud-deployed data stores and database platform as a service. However, for the foreseeable future, the focus will be on hybrid multi-cloud.

Enabling 'data democratisation' through semantic-layer-based data catalogues and establishing data lineage through metadata-based data governance is becoming imperative to meet compliance regulations. Convergence of business intelligence (BI) and advanced analytics into DBMS is increasing because it is more efficient to train models where data resides through functions.

More efficient deployment and management of data architectures through serverless, containers and orchestration advancements will support the hybrid multi-cloud trend. Applications that require real-time processing of high-volume event streams are pushing the limits of traditional data processing architectures and infrastructures. MIIs are finding it increasingly important to act on data in motion in order to remain competitive. Digital transformation is driving the need for analysis of what is happening now, not what happened yesterday or last month.

In this decade, the ability to act in real time will become a key element of service level agreements (SLAs) across multiple domains, from finance to cyber security. MIIs are looking to embrace streaming architectures coupled with cutting-edge data processing engines and frameworks to create streaming data applications, using complex-event processing, real-time streaming analytics and event processing.

2. And how is your firm getting ready for the changes you have outlined above?

NSE has always been a technology-driven exchange. In fact, it has always pioneered new technologies for the Indian capital market. NSE was the first stock exchange in the world to use VSAT for communication and connectivity.

Risk management and settlement have always been its key priorities. Long back, NSE devised online, real-time margin computation and collection which checks the availability of collateral before accepting a new order and takes into consideration the volatility of the market.

Currently, NSE is developing end-to-end digital transformation of the services to enhance the stakeholder's experience by leveraging latest and modern data, network and real-time streaming data analytics technologies across trading, risk, surveillance, clearing and data dissemination.

A great stakeholder experience depends on a great staff experience. This will be achieved by empowering the workforce with tools such as data and insights, to better engage with customers and address their needs. Also, optimising the productivity of staff and facilitating staff flexibility through AI-enabled mobile scheduling tools.

Digital business will spawn new business models, which will require new skills and competencies with new partnerships and collaboration. Identifying opportunities to collaborate internally and externally to add capabilities, increases speed and scale sufficiently.

Enabling staff: This will be done by ensuring staff members have the basic advantages like stakeholders such as mobile agility, product information, and accurate stock visibility. Also, expanding capabilities further with data and analytics helps them proactively serve and pre-empt stakeholder needs through personalisation and targeted service. Timely and appropriate rewards and recognition will keep them motivated and engaged, enabling them to perform better.

Employing automation: This will be achieved by auditing in-store processes and activities to identify viable areas for automation, with a focus on routine, repetitive associate tasks. NSE will consider technologies such as RPA or robotics for regulatory processes automation. The focus will be on solutions that optimise the time associates can engage with and help customers.

Making it memorable: We will ensure that our staff improves stakeholder interactions through technology.

3. Entering a new decade is not just about looking ahead; it's also a good time for reflecting on the past. What's the top lesson you have personally learned from the past 10 years?

Digital disruption is making financial markets more transparent, accessible, inclusive, and efficient. Moreover, it also helps the regulators get a better sense of the risks that participants typically take.

The theme of the last digital decade was 'creating value together', which reflects emphasis on engagement and teamwork with so much value seen in working together, traditional organisational boundaries become blurred. Indeed, it is hard to tell where one enterprise ends and another begins as the boundaries between companies, customers, partners, and suppliers blur.

In the last decade, modern technology platforms such as Google, Facebook, Amazon, and Apple were very powerful, and our world changed totally by their adoption and success in societies everywhere. These platforms constitute a true paradigm shift.

Financial institutions have started using artificial intelligence (AI) to experiment with service which is far more personalised. Many institutions piloted AI-based client advisors, where the AI engine is primed with the entire product manual, past call history, policy and procedures guidelines, and more, to provide context based service to their customers.

AI, machine learning, and customer analytics are likely to become the driver of client engagement over the next decade. Certainly, financial institutions will need to deliver instantaneous, seamless transactions, but speed is just the baseline requirement. Smart businesses will develop new forms of virtual engagement capable of integrating themselves with customers' lives.

Financial institutions have a lot on their plate: emerging competitors, shifting demographics, rising stakeholders expectations, and changing regulations. Technology offers solutions allowing financial institutions to cut costs and become more efficient at what they do. Most technologies are not proprietary, so it is a bit of a race: if you blink, you might find that your competition has already built up advantages that are now harder for you to match.

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