



IIMC-CRC-2017-02

*IIMC CASE RESEARCH CENTRE (IIMCCRC)*

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*AUGUST 2017*

## VALUE CREATION THROUGH BIG DATA ANALYTICS AT THE BOMBAY STOCK EXCHANGE

*“There were some performance issues and we knew performance would deteriorate even further if our data grew manifold. We tried to reduce our costs by going open source but we did not think it would reduce so much and the additional benefits would come. Now of course, we have gone into additional things which we would not have even dreamt of. Since the costs are lower we are using the framework for real time surveillance activity by analysing social media feed. We have gone for more high tech futuristic things using the open source Hadoop framework.”*

- Ashishkumar Chauhan

In May 2017, on a hot and sultry summer afternoon, Ashishkumar Chauhan, the Managing Director and Chief Executive Officer (MD & CEO) of the Bombay Stock Exchange (BSE), in his Dalal Street office, Mumbai was contemplating about how to leverage the big data framework for the various departments of the BSE. The BSE, Asia’s oldest stock exchange, had traditionally used proprietary technologies, and the implementation of the open source based big data infrastructure was path breaking. The mantra of the BSE had always been to

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*Prof. Indranil Bose and Adrija Majumdar of the Indian Institute of Management Calcutta developed this case study as the basis for class discussion rather than to illustrate the effective or ineffective running of an organization.*

Indian Institute of Management Calcutta gratefully acknowledges the financial contribution of 23<sup>rd</sup> batch of PGP alumni in fully supporting the expenses toward development of this case study at the Case Research Centre of the institute.

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be fault tolerant and to never lose any data. Historically, the BSE had relied on proprietary technologies, hence there was apprehension amongst certain sections of the organisation whether open source technologies would efficiently handle their processes or not. Thus, experimentation with a new technology at the BSE consisted of huge risk, and it was not done until the year 2013.

Around the end of 2013, the BSE had partnered with technology firm DataMetica to create the enterprise data hub. The entire exercise was executed using open source technologies. The BSE commissioned a 500 TB Hadoop cluster and moved their traditional information management platform to an open source platform. This movement into open source environment resulted in drastic reduction in costs, improved the performance level and served as an '*eye opener*'. The costs had reduced by 20% with an overall savings of 50 million INR annually. The project was conducted in phases and when the results turned promising it was scaled up.

Reaping the initial benefits from using open source based big data framework BSE eventually shifted some of its applications that were previously running on proprietary technologies to open source platforms. They had effectively utilized the big data Hadoop framework for fulfilling complex reporting functionalities, and eventually created the rumour detection analytical module for the market surveillance team. As of August 2016, the rumour detection tool had a predictive accuracy of 90%. The module improved the coverage of scanning, included social media and most importantly automated the process of identification of rumours.

Previously, the onus of running the applications rested mostly with the IT team owing to shortage of licenses for companywide usage. This was due to the extremely high costs of licensing per user of the proprietary technologies. However, post-implementation of open source technologies the concept of licensing per user had been abolished and any user (IT or business) could efficiently use the system. Still, many users were yet to adopt the new framework for their functionalities. Some questions loomed large. How could BSE more effectively leverage the big data framework? How could the BSE convert short term wins to long standing competitive advantage? How could the BSE become an analytical innovator through their use of big data?