

Chapter 17

The Dynamic Role of Big Data Analytics in Learning and Development and Its Impact on Risk Analysis in Stock Market



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Abstract Big data analytics is making a paradigm shift in all industries, including banking, financial institutions and stock broking companies. The financial big data analytics (FBDA) is considered as one of the key areas of enhancing the management, governance, performing critical analysis and support the management, regulators and managers to make profound decisions. It is noted that the big data is transforming the finance sector mainly stock market domain in assisting the risk managers and investors to measure the risk in an effective manner so that they can invest in better assets like stocks, bonds, mutual funds, exchange traded funds (ETF) etc. for enhancing the return on investments. Every day there are millions of financial transactions which occur in the financial community around the world, the financial practitioners and risk management analyst need to upgrade their knowledge through continuous learning and focus in analysing the risk efficiently so as to enhance their investment plan and realise the financial goals. The risk management is considered as the systemic modelling which enables in the estimation of the interrelationship amongst the financial institutions, big data applies the major characteristic which is comprised of 4 Vs—Volume, Velocity, Variety and Veracity this enables in analysing the large volume of data available in stock prices, forecast the volatility and manage the risk in an appropriate manner. This paper enables in presenting a conceptual understanding on the dynamic role of big data analytics in learning and development and its impact of risk analysis in stock market, this paper enables in presenting sophisticated methods for risk control based on big data analytics in creating new finance aspects by analysing the overall feelings based on massive textual information from

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the social networks, apply various technologies in creating ways of estimating risk and enhance their return on investments (ROI).

17.1 Introduction

In the age of dynamic business environment, the technological innovation is driving competitive edge for the business. Companies are focusing in using the technologies for upgrading the skills and abilities of their employees which will enable in increasing their performance, support the organisation to enhancing their service offerings, engage the customers, create strategies which will out beat the competition effectively. Through the use of big data analytics. The management can analyse and forecast the precise learning and development needs which will enable them to support in various functions. Human resource managers along with operational heads can use the power of big data analytics in analysing the training needs in the organisation, measure the skills required by the individuals to enhance their performance and provide better services for realising the mission and vision of the organisation [1].

Stock market is considered as one of the key fields in the world, which involves in forecasting the price movement of the assets involving stocks, bonds, commodities, foreign exchange etc. The analyst, researchers and employees in the stock market tend to apply various learnings which cover fundamental analysis, technical analysis, analysing the global economy, company specific analysis etc. hence, the knowledge and skill is highly important for enhance the prediction level and thereby support the organisation and other stakeholders to realise their financial objectives. The employees need to analyse different data sets related to historical information and current aspects in order to forecast the price of the security, all of these aspects tend to add more data each data and hence business analytics enable in analysing the requirements of the individuals. On the other hand, big data analytics enables in supporting the management in creating a new means of creating personalised learning requirements, responsive to assessment and actively engage the learners so that they can access the learning anytime based on their convenience. Hence, the employees, analyst and risk managers can unleash the role of business analytics to equip themselves and enable in analysing the risk of securities in the stock market. Hence, this paper is focused in analysing through conceptual aspects the overall role played by the business data analytics in learning new concepts, skills and knowledge in stock market and how it supports the intended users in predicting the risk and other key aspects in their profession.

17.2 Review of Literature

Anware et al. [2] have mentioned that big data intends to refer to the large volume of data which is stored, processed for making effective analysis. Big data uses different tools and methods which enable in extracting patterns from the large volume of data which are available in the hands of the organisation. The greatest resource in the financial services sector like stock broking, risk management, insurance companies is stated to be the human capital, hence organisations tend to provide necessary training and enhance their skill so as to gain competitive edge. On the other hand, Sun et al. [3] have stated the big data analytics has enabled in addressing the training needs of the risk analyst so as to perform their function effectively. In stock market, the risk is mainly categorised into systematic risk and unsystematic risk, furthermore other risks like interest rate risk, currency risk, inflation risk, business risk etc. tend to impact the performance of the stock in the market. Hence, appropriate training needs to be provided in order to measure the risk and identify strategies which will enable in managing the stated risk so as to enhance the return on investments.

Furthermore, the impact of data analytics enables the organisation to measure the performance of the individuals and devise unique training plans so that they can perform effectively in their profession [4]. The application of big data tends to consider various inputs and thereby perform detailed analysis so that the overall training needs can be assessed. The career progression in the modern business environment is dynamic, the individuals need to be prepared and equipped with different skills so as to meet the requirements of the organisation, hence using data analytics the current skill set required to perform the job can be assessed and employees can enrol for the program accordingly (Table 17.1).

Table 17.1 Opportunities of big data analytics in learning and development

Categories	Possible outcomes
Measuring training needs	Business data analytics can apply tools and techniques in order to identify the pattern and can implement flexible training solutions
Methodologies	Business data analytics tend to create new methodologies, create better engagement to support the training needs
Optimal balance	The data analytics focuses in creating optimal balance between the job responsibilities and upgrading the skill set of the employees
Sustained collaboration	There is a sustained partnership between the management and application of data analytics in meeting the training and development goals

Source Rabhi et al. [4]

17.3 Research Methodology

The main purpose of the study is to apprehend various academic research which has been carried out in the area of big data, machine learning and stock market. The researcher will use descriptive research study so as to understand the critical nature of big data analytics in financial services mainly in the stock market domain and how the managers and analyst utilise them in order to enhance their skill set for forecasting the risk and managing them efficiently so that they can enhance the profits for the investors, clients and other stakeholders.

The researcher uses secondary source for collecting the past literature reviews, major electronic database used is Scopus and Google Scholar, the major words used are big data, risk management, learning and development in organisation, stock market, big data in financial services etc. [5]. The researcher focused mainly on the peer reviewed and published journals, however certain dissertations and other related reports were also considered in order to perform the research. The study uses qualitative data design as it enables in collecting the academic journals in the area related to big data analytics and its overall impact in providing training to the individuals for forecasting the risk and managing effectively in the stock market. The researcher does not apply any primary data collection for performing the study.

17.4 Critical Discussion

The purpose of implementing business data in business is that it can extract meaningful patterns and analysis from the available data sourced internally and externally for efficient decision-making, also business analytics supports the organisation in forecasting and interpreting the data in a more meaningful manner [6]. Organisations tend to possess large volume of data which are historical and current in nature, big data supports in applying different tools like machine learning, deep learning, application of statistical tools in order to convert the raw data into meaningful information [7]. The human resources managers and training heads use the data available related to employees to measure their performance and also to devise unique training plan which will enable them to enhance their skills and abilities, make them perform better and realise their personal and organisational goals.

Big data analytics supports the management in the financial services industry mainly in stock broking to understand the overall performance of the employees and assign them the necessary training so that they can enhance the performance. The following are some of the key attributes on the dynamic role of big data analytics in learning and development and its critical influence on risk analysis.

17.5 Identification of Critical Training Needs

In the stock market profession, the individuals need to enhance their knowledge and skills on a constraint basis. The big data analytics supports the organisation and individuals in analysing their current nature of work, performance level and desired career path, provides critical analysis on the nature of training program which can be enrolled for achieving the specific task [8]. Business enterprises are adopting new and sophisticated tools so as to understand the impact of data analytics driven training needs towards employees and organisational performance. The application of such tools has brought in various benefits to the individuals and management through better performance, foster organisational change, delivering enhanced services to the customers and enable in creating better career progression for the individuals (Table 17.2).

In a recent study it is noted that one of the critical aspects of implementation data analytics is to support the management and supervisors to equip the skill set of the employees so that they can perform better, since estimating risk is always dynamic in stock market, the individuals need to possess the necessary knowledge, and data analytics can determine the specific training which the individuals need to undergo at their level.

17.5.1 Focused Approach

The human resource managers and training heads tend to apply business analytics so as to define the specific strength and weakness of the human capital and make the necessary adjustments. Specific training program can be devised and implemented which will enable in creating better and skilled workforce in the organisation. The risk managers need to understand the potential of the individuals and create training strategies based on the experience and skill set of the individuals [9]. The major

Table 17.2 Risk management framework through business analytics

Nature of risk management	Impact of business analytics
Identification	Business analytics enable in identifying the specific set of training needs in the area of risk management for the employees. Enable in identifying the future trend and suggest the best programs for supporting employees and management
Assessment	Analyse the underlying data, estimate the patterns through application of various tools
Management and control	Manage the training programs and provide the necessary modes like online, classroom training etc. based on the employee skill set
Reporting to management	Provide real-time performance measurement of the employees before and after training, calculation of risk and enhance better customer delivery

aspect of big data analytics in risk management learning is that it can integrate the trainee knowledge with the larger dataset and determine which mode of training will be effective for the individuals. Also, the big data support in continuous monitoring and evaluation of the individual progress, measure against the training with that of the actual performance in their job responsibilities and support them in growing in their career path.

17.6 Constant Improvement

The application of big data analytics in learning and development supports the HR managers and senior leadership team to monitor the progress of the employees on a continuous basis and implement the strategies for continuous improvement. Individuals need to enhance their skill and capabilities so as to meet the dynamic market environment, hence to harness such abilities it is necessary for the management to look at different training programs for constant improvements [10]. The cloud-based tools support in getting the real-time updates on the training progression and its impact on their job responsibilities. The clear interconnection amongst the risk management and influence of training has led to increase in implementing the necessary technologies to support the employees in a dynamic manner.

The critical framework in the risk management activities tend to analyse the overall risk and provide the investors, clients and others to invest in securities which generate better ROI and also manage the risk effectively.

17.7 Imminent Outlooks

The application of business analytics and other related tools are highly significant for the organisation to create competitive edge. In the service industries, the employees are considered as critical assets as they tend to be in close relationship with the customers, therefore it is highly necessary to provide the trainings and enhance their skill set so that they can offer better services. Through business data analytics, risk analyst, managers, advisors and employees can estimate the risk in stock market in an effective manner and suggest their clients to invest and manage the investments effectively [11]. Hence, the impact of business analytics on learning and development is profound in different industries including the financial services sector. The organisation is using big data analytics and sustainable progression as key trends in order to enhance business performance, make their team adequately trained and implement strategies to achieve the stated mission and vision of the organisation. It can be further stated that the implementation big data analytics enables in forecasting the future trends and hence provide the training to the employees in the current context to meet the expectations.

Developments in process-oriented learning techniques include conversational teachers who “read” short written answers with latent semantic analysis and automatically generate clues based on historical data using advanced methods, Machine learning. In all of these scenarios, the data size is derived from many data points as the student progresses. These data points can be made semantically readable for the student and the teacher in the form of immediate feedback. Over time and for many students (one class, all software users, one demographic), the data size increases proportionally. The financial markets are always looking for technical innovation for various activities, namely technical innovations that are always positively accepted and that have a great impact on the financial markets and that have a real transformative effect.

17.8 Conclusion

The stock market is considered to be one of the most important sectors in the world, which includes forecasts for asset price movements, including stocks, bonds, commodities, currencies and so on. Stock market analysts, researchers and employees tend to apply a variety of knowledge, including basic analysis, technical analysis, world economic analysis, company-specific analysis and so on. Therefore, knowledge and skills are very important to improve the forecast level and thus help the organisation and other stakeholders to achieve their financial goals. In addition, the effect of data analysis enables the organisation to measure individuals’ performance and design individual training programs so that they can practice their profession effectively. Big data applications normally take into account different inputs and therefore perform detailed analysis to assess the overall training needs. Comprehensive data analysis helps management in financial services, especially in real estate, to understand employees’ overall performance and provide them with the training they need to improve their performance. Below are some key features of the dynamic role of big data analytics in learning and development and its critical impact on risk analytics. Personnel managers and trainers often use business analysis to identify strengths and weaknesses of human capital and make necessary adjustments. A special training program can be designed and implemented to create a better and more specialised workforce in the organisation. Risk managers must understand the potential of individuals and develop training strategies based on individuals’ experience and skills. The most important aspect of big data analysis in learning risk management is that you can integrate student knowledge into a larger amount of data and determine which training method is most effective for individuals.

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