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BIG DATA TECHNOLOGIES IN FINANCIAL MANAGEMENT: TRENDS AND CHALLENGES

This paper describes the challenges that Big Data (BD) brings to financial management and is aiming to illustrate that only through quick adoption an enterprise can remain competitive in "Big Data" era. The paper analyzes the use of Big Data techniques in financial management and describes the main paths of Big Data technologies development.

Introduction

According to expert's opinion, the traditional static Business Intelligence tools can't compete with BD applications (Oussousa A., 2018). 59% of employers in United States of America consider that advanced analytic skills will be necessary for financial and accounting managers in 2020. Through the deep processing and financial information mining, an enterprise can improve its financial management (FM), lower cost of capital, and increase its profit. Enterprise financial management refers to different areas, such as financial accounting, managerial accounting and tax accounting. Along with the numerous advantages, BD techniques and technologies bring to FM several challenges.

Findings:

1. Big Data platforms are enable to extract knowledge and value from complex dynamic environment. They support decision making through recommendations and automatic detection of anomalies, abnormal behavior or new trends. Currently, the most popular Big Data visualization techniques used in platforms are: treemaps, circle packings, sunbursts, parallel coordinates, streamgraphs and circular network diagrams (Wang 2015). The common BD techniques currently used in FM are: Regularized Regression, Splines; Support Vector Machines; Naïve Bayes and Bayesian (Belief) Networks; Genetic Algorithms including Genetic Programming; Artificial Neural Networks; Association Rules; Clustering and Data Segmentation; Latent Variable Models; Ensembles.

2. BD can bring the following advantages: cost saving, risk control, improvement of management efficiency and value increasing. From the other hand, BD brings some challenges [Hussain 2016]:

• Unevenness of Data Quality. This the processing financial data is to gather data, to select relative data and not conflicting data. In case of analysts

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manage the data disregarding the of quality, it is highly possible to make wrong predictions and decisions [Hussain 2016].

- Threat to Privacy. In 2011, a survey conducted by Canada Privacy Commission indicated that 60 percent of the interviewees thought their privacy and became more insecure compared with 10 years ago [Hussain 2016].

- Lack of Talents. BD application requires enterprises to create a new data analysis models. Very often the enterprise is short of talents who can create the new data analysis models [Hussain 2016].

- Old culture and infrastructure: Many enterprises and banks are still dependent from old IT infrastructure and experiencing difficulties in understanding, estimating and appreciating how BD analytics can improve their core business.

3. The latest trend is the Convergence of BD and AI in finance and accounting sphere [4]. The Cognitive BD Systems are the synergy of analytics and artificial intelligence methods. Some financial experts underline the importance of ability to predict outcomes with the high degree of accuracy (Hurwitz et al., 2015). They also emphasize the importance of using the combination of advanced cognitive analytics and BD technologies during the fast speed processing of large volumes of current financial data to provide the competitive advantage. For example, the automated trading algorithms need the human support to prediction. The usage of only the BD techniques may lead to errors and quick fall in stock market (Hurwitz et al., 2015).

Conclusion

Financial managers are in a unique position as business leaders, advisors, and IT users to not only create outcomes but also to maximize BD opportunities. This can only happen in case the financial managers apply cognitive technologies and are proactive in enhancing their skills to meet the needs of a BD powered world.

Referencies

1. Oussousa A., Benjellouna F-Z., Lahcenab A., Belfkiha S., (2018) Big Data technologies: A survey. Journal of King Saud University - Computer and Information Sciences, 2018 . – Volume 30. – Issue 4. – P. 431 – 448.

2. Wang L., Wang G., Alexander Ch. (2015), Big Data and visualization: Methods, challenges and technology progress, Digital Technologies,2015. – vol. 1. – 1. – P. 33-38, doi: 10.12691/dt-1-1-7.

3. Hussain K., Prieto E. (2016) Big Data in the Finance and Insurance Sectors. In: Cavanillas J., Curry E., Wahlster W. (eds) New Horizons for a Data-Driven Economy. Springer, Cham.

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4. Big Data and Artificial Intelligence — The Future of Accounting and Finance, (2019), Chartered Professional Accountants of Canada, file:///C:/Users/olamichal/Downloads/02041-RG-Big-Data-AI-Future-of-Accounting-Finance-January-2019%20.pdf

5. Hurwitz, J., Kaufman, M., Bowles, A. (2015). Cognitive Computing and Big Data Analytics, Wiley&Sons, Canada.