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Big Data Possibilities in Finance?

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Abstract:- We investigate the research prospects for using "Big data" in accounting and finance. The study's goal is to provide a picture of big data academic research in information systems, accounting, and finance, as well as to propose opportunities for future research in accounting and finance. "What are the key topics in existing big data research, and where are the resulting gaps in the accounting and finance literature?" is the study subject addressed in this work. Risk and security, data visualization and predictive analytics, data management, and data quality are the six under-researched aspects of big data in accounting and finance. Increased research in these areas will result in improved industry practices as well as chances for cross-disciplinary study.

I. INTRODUCTION

The impact of big data on academic research in finance is already beginning to emerge, but many issues remain. The traditional definition of big data as comprising three V's (volume, velocity, and variety) has strong linkages to engineering and computer science, but it does not fully capture the benefits and problems that big data presents to finance research and practice.

The research issues addressed in this study include what the primary themes in present big data research are and where the resulting gaps in the accounting and finance literature are. Based on a systematic analysis of big data papers with a specific focus on accounting and finance subjects, the study provided here identifies research themes in the information systems, accounting, and finance literature. This also indicates gaps in the literature and opportunities for accounting and finance study. We identify gaps in the existing IS literature dealing specifically with finance and accounting concerns for IS researchers.

The term "big data" was first used in a generally referenced context at an invited talk at the USENIX annual technical conference (Mashey, 1999). A simple search for the term "big data" in the Scopus database reveals an exponential increase in articles relevant to big data over the last ten years (see Figure 1). Academic references to the phrase are more widespread in biomedical informatics in the early 2000s, and only appear in accounting and finance literature around 2011.

Big data refers to extraordinarily big databases, often greater than a petabyte (1015 bytes), that present unique storage issues and must be analyzed using computational methods.

There has been a rise in big data scholarship, with a number of excellent reviews emerging (Abbasi et al., 2016, Akter and Wamba, 2016, Frizzo-Barker et al., 2016), but none especially focusing on the accounting and finance literature.

Most firms believe they can utilize big data strategically to build products for their consumers and to change people's perceptions of data and goods, resulting in enhanced company value and data monetization (Frizzo-Barker et al., 2016). The application of this to accounting and finance is a topic of academic and industry interest. Goes (2014) stated in a 2014 MISQ editorial that, despite the lavish and ambitious statements of many industry commentators, many organizations struggle to make sense of big data. According to the same article, while behemoths like Amazon and Google have their big data strategy figured out, mid-sized businesses, in particular, are struggling with the problem of big data. In relation to such businesses, According to Goes (2014), the misunderstanding is worsened by the extremely fragmented landscape of big data solutions and applications.

II. FINANCIAL DATA

Accounting and finance data is a subset of enterprise data that contains broader operational and transactional data for analysis and forecasting. According to the literature, big data encompasses new sorts of internal and external data, much of it is unstructured but gives fresh insights into corporate performance, dangers, and opportunities. This broader view of data includes social media data, which is increasingly being collected as part of firms' online activities (Pereira Correia et al., 2014)

- *What Exactly Is Big Data in Financial Research?*

It is quite obvious that definitions of big data used in finance research should differ from those used in engineering and statistics. Researchers in these fields are concerned with providing facilities and tools for data acquisition, curation, management, and processing. Financial economists, on the other hand, concentrate on using these methods to answer intriguing economic puzzles. While providing a broad-based description at this stage is dangerous, we believe it is vital to try. The definition may be vague or partial, but it will serve as a foundation for subsequent iterations and corrections.

III. LITERATURE REVIEW

Following in the footsteps of Fergusson and Seow (2011) and Gaunt (2014), an exploratory search was conducted using the term "big data" and the ISSN numbers of all journals with field of research (FOR) codes relating to IS, Accounting, and Finance on the Australian Business Deans Council (ABDC) list. While this list is geared for Australian academics, it is comparable to other business-focused journal lists around the world, such as the chartered association of business schools ABS list. Scopus, ABI/INFORM, Web of Science, and EBSCO host were the primary business reference sources used.

The search was limited to peer-reviewed and scholarly journals, as well as papers published between 2007 and 2016, yielding 3082 results. Then, using a filter, only journals on the ABDC list were returned, yielding 529 journal articles. Over 300 of them, however, were from IS publications that addressed non-financial topics such as using Hadoop, social media attitudes, and big data analysis in other domains such as health. A practical screen was used to eliminate book reviews and literature reviews and to focus on publications that directly described financial data applications.

IV. DATA MINING AND REAL-TIME PREDICTIVE MODELING

The "large" in big data might come from the technique of collection (e.g., sensor data acquired by the minute) or from the fact that it was collected over a lengthy period of time (e.g., transaction data collected over a 25-year period). Computational approaches have evolved to meet the needs of the scientific community since 1990. The requirement for additional processing capacity has also prompted the creation of more efficient computational programs and new hardware (Raichel et al., 2014).

Predictive modeling, which includes classification, clustering, and association rules, has progressed from retrospective analytical techniques to techniques that enable organizations to predict outcomes based on historical data, such as detecting potential credit card fraud at the point of sale based on transaction features.

- *Data Visualisation*

Frankel and Reid (2008) were among the first to investigate the idea of bringing together graphic designers, computer scientists, and statisticians to create enhanced and meaningful data visualisations.

"Big" data has more patterns and fascinating anomalies than "small" data, or has the potential to have more of them. There hasn't been much research done in this subject so far. Flood et al. (2016) monitor financial stability using visual analytics**.** Visual analytics in management accounting identifies abnormal and potentially fraudulent accounts payable transactions (Singh and Best, 2016).

V. DATA QUALITY

The same data quality criteria apply to large data: correctness, completeness, and timeliness. Nonetheless, big data has opened up new avenues for studying data integrity and quality. These opportunities include data integration from various databases and silos, as well as ensuring that the organization captures trustworthy, high-quality data in the first place (CGMA, 2013).

Historically, data quality has been the domain of data administrators within organizations. Auditors are now playing a larger role. Alles (2015) stated that when big data becomes an important component of client strategies through Customer Relationship Management (CRM), social networking, or other methods, auditors would need to understand tools and procedures for ensuring data quality.

VI. PREVENTING AND DETECTING FRAUD

Drew (2013) reported on a survey of accounting professionals on the security dangers of mobile devices and the huge migration of confidential data to the cloud. In this case, big data opens up new study options in data security. Several researchers have also investigated the use of big data for fraud detection. Brenan et al. (2014), in particular, described the use of real-time analytics to detect Medicaid fraud.

Ferguson (2012) reported on the use of behavioral analytics in the prevention of fraud. He created a business ethnography based on bookkeeping, clinic management, or employers. A large amount of (past) data was then used to forecast how such behavioral antecedents would lead to fraud. Chivers et al (2013) utilized a similar approach to detect insider assaults within organizations.

VII. INTERNET OF THINGS AND CUSTOMER INTELLIGENCE

Big data can be used to monitor and manage customer happiness in the same manner that trip advisor and other services do. When looking for trends in unstructured data, businesses employ standard measurements such as customer happiness. New frames of reference, such as consumer networks of influence, may be discovered through research. In the finance industry, the application of customer insights is quite mature (Fanning and Grant, 2013, Marjanovic and Murthy, 2016, Shanmugam et al., 2015, Yu et al., 2015).

VIII. DISCUSSION AND CONCLUSION

We examine the existing big data literature (both commercial and academic) to find themes for accounting and finance study and practice.

Models of trust and reputation in customer service sectors are well-investigated areas of big data. Customer analytics has also been adopted by the banking and finance industries. Furthermore, research is being conducted on trading signals and fraud prevention. Privacy and security, data visualization and predictive analytics, data management, and data quality are the six under-researched aspects of big data in accounting and finance.

We anticipate that information governance, non-financial reporting, and consumer insights will be particularly lucrative areas of future big data research based on our structured evaluation of the literature. Furthermore, the accounting profession is ideally positioned to take advantage of big data for risk and fraud management, data visualization, auditing, and performance monitoring.

AI approaches are used in asset management and buy-side activity in the asset market.

Allocation and stock selection based on ML models' ability to spot signals and capture underlying correlations in big data, as well as optimization of operational workflows and risk management.

AI techniques may be kept for larger asset managers or institutional investors with the resources and capacity to invest in such technology.

Artificial intelligence (AI) approaches are increasingly being used in finance, in fields such as asset management, algorithmic trading, credit underwriting, and blockchain-based finance, thanks to an abundance of available data and affordable processing resources. Machine learning (ML) models employ big data to learn and improve prediction and performance automatically through experience and data, without being programmed by people.

REFERENCES

[1]. BHIMANI, A., and L. WILLCOCKS. 2014. Digitisation, "Big Data," and the Transformation of Accounting Data.
[2]. 469-490 in Accounting and Business Research, 44.
[3]. 2016. BIGDATAFINANCE. [Online] BigDataFinance. Manchester. [Accessed at: http://bigdatafinance.eu/].
[4]. P. A. BIZARRO and I. D. DACOSTA. Benefits, hazards, and controls of data life cycle management. Internal Auditing, no. 29, pp. 10-14.
[5]. K. BRANDS. Big Data and Business Intelligence for Management Accountants. 2014. Strategic Finance, vol. 96, pp. 64-65.
[6]. N. BRENNAN, A. OELSCHLAEGER, C. COX, and M. TAVENNER. 2014. Leveraging the Big Data Revolution: CMS Expands Capabilities to Accelerate Health System Transformation. Health Affairs, vol. 33, pp. 1195-202.
[7]. CGMA 2013. Unlocking big data potential from insight to effect. Durham, NC: AICPA, Chartered Global Management Accountant Report.
[8]. H. CHEN, R. H. L. CHIANG, and V. C. STOREY. Analytics and business intelligence: Management Information Systems Quarterly, 36, 1165-1188.
[9]. CHUA, F. 2013. Commercial accountants require big data [Online]. Available:\shttp://www.rkfinance.co.uk/latest-finance-updates/commercial/big-data-essential-to-commercialaccountants [As of January 2016].
[10]. J. CICON. Big Data and the Dot Com Bubble. 6, 15-22, International Journal of Economics and Finance.
[11]. R. CLARKE. Large data, big hazards. 77-90 in Information Systems Journal.
[12]. T. H. DAVENPORT and D. J. PATIL. 2012. Data Scientist: The Sexiest Job of the Twenty-First Century. 90, 70-+ Harvard Business Review.
[13]. J. DREW. 2013. A Survey Highlights the Need for Data and Security Strategies. Journal of Accountancy, 215, pp. 40-45.
[14]. K. FANNING and R. GRANT. Big Data: Implications for Financial Managers. The Journal of Corporate Accounting and Finance, volume 24, pages 23-30.