Leverage Data Analytics for
FRAUD DETECTION

A GUIDE FOR INTERNAL AUDITORS

Contents

Preface

The number of ways someone can commit fraud is unlimited and rising day after day and hence detection can be difficult to accomplish.

Frauds can be perpetrated in a number of different ways and in a number of different settings. It can be committed in sectors such as banking, insurance, manufacturing, financial services, government and in healthcare to name a few.

Fraud detection is a challenging task. Techniques of detecting fraud include the use of Data mining, Neural networks, Machine learning, Pattern recognition etc. With vast amounts of data, abusive scheme transactions are hidden and are very difficult to unearth by traditional means. Data analytics can assist in uncovering signs of potential fraud with the aid of software to sort through large amounts of data to highlight anomalies and red flags.

The Publications Committee of IIA India has, therefore, thought it fit to bring out a handbook guide on "Leverage Data Analytics for Fraud Detection" which will be found very useful by the Internal Auditing community. The authors Shri AR Parthasarathy and Shri Raman Narasimhan have put in their best efforts in preparing this study material within the short time given to them. It is also pertinent to mention here that Shri Aditya Kumar, a Chartered Accountant of Bangalore has also contributed in a significant way in the compilation of this study guide.

I hope that the timely publication of this handbook will be found very useful by the auditing professionals.

Any suggestions for enhancing the utility of this book are welcome from the readers which will be considered by the Publications Committee for updating the future edition.

21st January 2020
Vidyadaran Krishnaswamy
Project Director & Publications
Committee Chairman

From the IIA India President

The Publications and Social Media Committee of the IIA has come out with this relevant and crisp publication to serve as information and guidance on Leveraging Data Analytics in Fraud Detection. I am sure that those who aspire to be in the fraud detection space, as well as those who are in this space, will find the book extremely handy to a professional and logical conduct and conclusion.

If there are many ways to perpetrate a fraud, there could be as many ways to detect them too. The authors here shed light on the secret formula that is the common thread across most – if not all – frauds. And that is what makes this a compelling read. There is a lot for us all to learn.

For this book, gratitude is due to the authors A R Parthasarathy and Raman Narasimhan for their ideas and articulation, Thiyagarajan Kumar and Joly Joseph for their eye for detail and Vidyadharan for conceptualising. Thank you all, also for the timely completion despite all the hurdles I placed before you.

My only prayer is that no fraudster reads this book!

25th January 2020   **R. Ramarao**
President, IIA India

Foreword

In my overall professional journey of around 35 years and coming from a generation where I have seen both the worlds (before and after technological advances), I can confidently say that phenomenal digital advancement has produced a "parallel universe" of new content, new data and information sources, that have been constantly on an expansion. Phenomenon of big data is ever more present, more pervasive and more important. Digital transformation means fraud transformation.

The systems of a decade ago simply don't address capabilities that are essential to enable the automated analysis of such large volumes of data. Among the missing capabilities of decade-old fraud management systems are: Machine learning, Self-service analytics, Processing capabilities for Hadoop, Visual interfaces that help made sense of data faster and more meaningful as we have today and Mobility.

My involvement with multiple clients from diverse industry and geography, have made me imbibe, listen and observe multi-faceted transformation of technology landscape and the need for these organizations to leverage and operationalize data analytics quickly to have edge and valuable differentiating strategy in the marketplace for both growth and fraud detection.

This book by A.R. Parthasarathy and Raman Narasimhan, provides valuable insights into current world fraud schemes and ways in which analytics can be used to illuminate those schemes. Not only does this book enumerate several existing fraud schemes and tools that can form a part of an organizations fraud tool kit but also, addresses various challenges related to failure to collect and clean up relevant data, failure to identify right analytics tools and infrastructure, presumption that analytics is expensive, absence of understanding of statistical methodologies like regression, forecasting etc.

Partha and Raman have delved deep into statistical analysis that can help organization understand the challenges that world is facing, relate it to organization and choose a solution that would help them build a robust technological environment and be ahead in game of the rapid changing landscape. My best wishes for their endeavour.

22 January 2020 **S. Ravi Veeraraghavan**

Executive Summary

"Financial Statements Fraud is deliberate misrepresentation, misstatement or omission of financial information for the purpose of misleading the reader and creating a false impression of an organisation's financial strength".

The financial statements are expected to be provided to the stakeholders with no material misstatements or omissions which could impair their understanding of the financial health of an organisation. Before the financial statements gets printed and comes into the hands of the stakeholders, it would have passed the review of the management, the internal and external auditors, at times by a government agency viz., Comptroller and Auditors General of India (C&AG) or Reserve Bank of India (RBI) etc.. Despite all the 'filters' or mechanisms in place, we have witnessed that there are companies whose financial statements have been found to be materially misstated and leading to loss of investor value, regulatory investigations, and even closure of business.

Asset misappropriation fraud – a most popular fraud type, involves third parties or employees abusing their position to steal from an organisation through fraudulent activity. Mostly the insider colluding with an outsider, exploit control gaps. The below are most common asset misappropriation frauds:

- Embezzlement by manipulating accounts or creating false invoices
- Deception by employees
- False expense claims

The other major type of fraud, viz., corruption involves
- Bribery
- Kickbacks
- Illegal gratuities
- Economic extortion
- Conflicts of interest

About the Authors

Raman Narasimhan is currently the *Head -Internal Audit* at *Sundaram Finance*. He has substantial global Forensics and Disputes consulting experience of more than 25 years. He has been a part of teams leading several risk advisory engagements in technology, pharma and financial services and manufacturing organizations. He has rich experience in Anti-Money Laundering (AML), digital forensics, cyber forensics per SEBI / RBI frameworks, standards including the information security, privacy, environmental security, etc., Prior to joining Sundaram Finance as Head of Internal Audit, Raman was heading forensics practice for south at Grant Thornton. He also had a stint with *TCS* and with *PwC* in their forensics services. He was earlier with a large US IT major *Dell Computers* managing their internal audit and fraud deterrence. He holds fellow membership with the Institute of Company Secretaries of India. Raman is also a Certified Fraud Examiner and founder President of Chennai Chapter of ACFE. and part of the global advisory council. He is a platinum member of ISACA with IT Audit, Security and Risk qualifications such as CISA, CISM and CRISC. He is also a certified arbitrator and a member of Science & Technology section of American Bar Association.

A R Parthasarathy has close to 25 years of experience in advising clients in the areas of enterprise risk management, performance improvement, cost reduction, investigations and operational reviews. Parthasarathy is a Fellow Member of the Institute of Chartered Accountants of India and the Institute of Cost Accountants of India. He holds a master's degree in Economics. He is a Certified Information Systems Auditor (CISA) and a Certified Internal Auditor (CIA).

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