Impact of Artificial Intelligence (AI) on Audit – An Introduction

By

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A word about me

• I am a FCA.
• I also have a B Tech (Hons) degree from University of Bradford, UK.
• Then I trained as a Trainee Chartered Accountant with Arthur Young McClelland Moores & Co (now Ernst Young) in Luton, UK.
• I am a Chartered Accountant who has been a Programmer, Software Developer, Integrated Technology Solution Provider, ICT Project Manager and an ICT Consultant for over 33 years.
• I have not been a practicing Accountant as such.
Cautions about AI
Humans need resurrection

• Technology is good if we are good.
• If we don’t shape up AI could spell doom.
• Stephen Hawkins remarked that AI or thinking machines could, when fully developed, spell the end of human race.
• Elon Musk of TESLA said AI could be more fatal than nuclear weapons – an immortal dictator.
• Sergei Brin, Google Cofounder, with greatest investment in AI warns about AI.
• Google uses custom AI chips that are million times more powerful than Pentium II chips.

• Alphabet/Google uses neural networks, for tasks such as
  • enabling self-driving cars to recognize objects,
  • translating languages,
  • adding captions to YouTube videos,
  • diagnosing eye disease, and
  • even creating better neural networks.

• Google got its name from googol which means 1 followed 100 zeroes.
• Google’s quantum chips could one day offer speeds of ‘googol’ over present computing power.
What is AI?

• Artificial intelligence (AI) as the name implies is artificial.
• Intelligence that we and animals have is natural intelligence.
• To understand natural intelligence we have to fully understand how our brains function.
• There are 100 billion neurons in our brain.
• How brain works is still a big mystery.
AI v NI – Natural Intelligence

• Artificial Intelligence is apparent “intelligence” demonstrated by computers/machines.

• Apparent because true intelligence is what us, mysterious living being only have.

• From early day attempts were made to understand whether thoughts and reasoning were all systematic like algebra.

• In early days artificial men and thinking machines were depicted in fiction.
History of AI

• Artificial Intelligence is also not new.
• Alan Turing, one of the fathers of AI came out with a concept called Turing’s test, in 1950.
• If a human cannot tell whether it is talking to a human or machine over teletype then that machine would pass Turing’s test.
• The term Artificial Intelligence was coined 63 years ago in 1955 when both Bill Gates of Microsoft and Steve Jobs of Apple were born.
• John McCarthy who taught Mathematics at Dartmouth College, Hanover, New Hampshire, USA coined the term.
• Later McCarthy formed AI Labs in MIT and Stanford and created LISP Computer Language for AI programming.
AI evolution

- Abacus for doing arithmetic dates back to prehistoric times – 5th century BC.
- Slide rule invented in 1622 used by engineers
- When IBM PC was introduced on Aug 12 1981 they had no idea what they had done.
- AI is an existential threat to humanity - Elon Musk of TESLA.
AI in your phone - Siri

• Robots or machines have not quite taken over yet.
• At least for now.
• But times are not far off when we will find them everywhere doing most of what we humans were supposed to be doing.
• From personal digital assistants like Siri in IPhones, Alexa from Amazon, Google Assistant to report writing AI robots we are in for a new experience here.
CAPTCHA stands for Completely Automatic Public Turing Test to Tell Computers and Humans Apart.
Stored Program Concept to Machine Learning

- Computers/ Machines traditionally store and follow instructions.
- John von Neuman in 1940s introduced this stored program concept.
- Programmers program the computer to do all the wonderful things, like Accounting and ERP that the computer does for us.
- Machine Learning, however, is a slightly different concept from stored program concept.
- Computers not only follow set of instructions to do things repetitively but they can also ‘learn’ to do things better.
- The term ‘Machine Learning’ was coined in 1959 by Arthur Lee Samuel.
- Machines progressively improve performance through feedback.
- Feedback is given through patterns and trends.
- This discerning of patterns or trends is done by data mining on Big data.
- Big data as distinguished from data is extremely huge in volume and contains structured and unstructured data.
- Data mining techniques extract patterns, trends from Big data, say for financial transactions.
AI is a coordination of Machine Learning, Deep Learning, Big Data, Cognitive Computing

- Artificial Intelligence is a coordinated system which involves Machine Learning, Deep Learning, Big Data, Cognitive Computing and much more.
- Artificial Intelligence (AI) uses Intelligent Agents (IA) who can sense and act accordingly.
- For example a thermostat is an example of an Intelligent Agent (IA).
IBM Watson – Cognitive Computing platform

- IBM Watson is a cognitive computer platform that is being used across the world to boost revenue, efficiency and even save lives.

- With astronomical increase in computational power and coming of age of human like question and answering system like IBM Watson AI is finding its use in our every day life.

- Cognitive computing simulates human thought process in a computerized model.

- Cognitive computing consists of self learning systems that mimics the way human brain works.

- This it does through data mining, pattern recognition and natural language processing.

- KPMG has partnered with IBM Watson to integrate AI technology with taxes and advisory services.

- KPMG and IBM Watson has developed data analytics tool to address Lease Accounting and find trends, patterns, anomalies and relationship in lease contract data.

- The above tool is for new IFRS 16 Lease compliance (effective from 1 Jan 2019) where Lessee treats pretty much all leases in the same way

- The Big Four PwC, EY, KPMG, Deloitte are ramping up investment in AI and related technologies to defend market share and to address regulators’ tough stance at the profession.
Applications of AI

- AI is ready for prime time now.
- It has been stuck in research labs for decades.
- AI can transform and disrupt all the sectors of the economy from tech to finance, communications, energy, healthcare, mobility or manufacturing that generate lots of data (big data).
- Image Processing – Google’s employees protested company’s contract with Pentagon to apply machine learning to videos from drones.
- Artificial Intelligence calculates insurance payouts in Japanese Insurance firm better than humans.
- Artificial Intelligence beats human pathologists at predicting patient survival times for some cancerous tumors.
- GO is an abstract strategy board game significantly more complex than Chess.
- It was invented by Chinese 2500 years ago.
- Artificial Intelligence programme called AlphaGo beat decisively one of the strongest GO players, Lee Sedol in 2016.
- The rise of artificial intelligence has recently led to bots writing real news stories about sports, finance and politics.
AI in Accounting

• Big data brings a new paradigm for accountants. Newer and newer relevant data becomes available.

• The video, audio, and textual information made available via Big Data can improve managerial accounting, financial accounting, and financial reporting practices.

• In managerial accounting, Big Data will vastly improve effective management control systems and budgeting processes.

• In financial accounting, Big Data will bring forth relevant accounting information, thereby enhancing transparency and stakeholder decision making.

• In reporting, Big Data can assist with the creation and refinement of accounting standards, helping to ensure that the accounting profession will continue to provide useful information as the dynamic, real-time, global economy evolves.

• Currently AI and Machine Learning are automating bookkeeping, reconciliations and much more. Major accounting companies like Intuit, Sage, XERO, OneUP, QuickBooks Online are offering such capabilities from their cloud-accounting platform. AI will be disruptive in the accounting arena. It will take away time consuming and hence lucrative work from human Accountants.
AI in Auditing

• Auditing to be a less of a burden as accountants embrace AI
• Auditors use drones to use AI and image recognition to analyze inventory information
• PwC and EY are using AI tools to automate part of the audit process
• Firms are now exploring more sophisticated artificial tools that “learn” over time the more information they gather, gradually gaining the ability to recognize complex patterns.
• Innovations in the pipeline include systems that can detect anomalies across all of a company’s financial transactions, such as unexplained entries that do not reflect what the business normally does.
• Auditors can harness the power of data mining and AI to help avoid further high-profile failures.
• Automating some repetitive manual tasks will improve efficiency, by freeing up employees to concentrate on areas where human judgment is needed.
• Mindbridge AI is an analytics company using AI to uncover material irregularities in data and has built in AI Auditor, a world’s first.
• The MindBridge AI Auditor analyzes all of the transactions using a hybrid of artificial intelligence, Machine Learning, statistical models and rule-based tests offering higher assurance. This has been proven to be at least 10x more effective than current approaches.
AI in Auditing (Contd)

- Audit as we now have using samples will not exist
- Web robots also known as bots can perform simple and repetitive tasks at breakneck speed
- Bots going around the system will do continuous audit
- Bots can learn and pick out the abnormal patterns
- Good Bots gather good information
- Bad bots produced as those used in US elections to launch malicious and harsh attacks.

- Cognitive Technologies, AI will enhance audit quality, automate processes and transform how an audit is performed.
- Natural language Processing, data analytics, machine learning are automating and streamlining labour intensive processes.
- Auditors will focus on higher value added areas, provide insights and deliver value beyond compliance.
- Organizations are already using Ethics and Compliance Software such as CONVERCENT, PREDICT360, iSight Case Management Software, Navex Global GRC (Governance, Risk, Compliance) software.
Blockchain and Bitcoin

• Blocks refer to record blocks and all blocks are linked using cryptography. Hence block chain.

• Blockchain is a continuously growing list of records, called blocks.

• Each block contains a cryptographic hash of the previous block, a time stamp and transaction data.

• There is no central authority controlling blockchain.

• It can record transaction between two parties in a verifiable and permanent way

• For use of Blockchain as decentralized, distributed public digital ledger it is typically managed by a peer to peer network

• No record can be altered retroactively over a network of computers without the collusion of network members.

• A global network of computers uses blockchain technology to jointly manage the database that records Bitcoin transactions.

• That is, Bitcoin is managed by its network, and not any one central authority.
BlockChain in Auditing

• Blockchain represents the next step in accounting.
• In Blockchain companies write to a distributed ledger, cryptographically sealed.
• Falsification, destruction or concealment is impossible in Blockchain distributed ledger.
• Standardisation will let Auditors verify data immediately.
• Fully automated audit will be possible.
• EY provides cryptocurrency wallets to all Swiss employees, has installed Bitcoin ATM in Swiss office and accepts bitcoin as payment of its consulting services.

• Accountancy profession lagged behind other industries in digitisation.
• This is because of high regulatory requirements for integrity of accounts
• Double Entry system allowed managers to trust their own books.
• Auditors gave outsiders confidence that accounts are ok.
• Audit is costly because it also takes up lot of accountants time.
• Blockchain is the answer that both double entry system and auditors provide.
• There are private, public and consortium blockchains
Closing Thoughts

• Have a passion for technology
• Be wise in its application
• Be open minded
• Be ethical
• Create an ethical environment
• Know your strengths
• Be an eternal student
• Use Youtube, Google etc – the best Universities in the world