

CONCEPT PAPER ON ABCD OF TECHNOLOGY



DIGITAL ACCOUNTING AND ASSURANCE BOARD

**THE INSTITUTE OF CHARTERED
ACCOUNTANTS OF INDIA**

(Setup by an Act of Parliament)



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INTRODUCTION

The Institute of Chartered Accountants of India

The Institute of Chartered Accountants of India (ICAI) is a statutory body established by an Act of Parliament, viz. , The Chartered Accountants Act, 1949 (Act No.XXXVIII of 1949) for regulating the profession of Chartered Accountancy in the country. ICAI is the one amongst accountancy bodies in the world, with a strong tradition of service to the Indian economy in public interest. Over a period of time, ICAI has achieved recognition as a premier accounting body not only in the country but also globally, for maintaining highest standards in technical, ethical areas and for sustaining stringent examination and education standards. Since 1949, the Chartered Accountancy profession in India has grown leaps and bounds in terms of

- Members and student base.
- Regulate the profession of Accountancy
- Education and Examination of Chartered Accountancy Course
- Continuing Professional Education of Members
- Conducting Post Qualification Courses
- Formulation of Accounting Standards
- Prescription of Standard Auditing Procedures
- Laying down of Ethical Standards
- Monitoring Quality through Peer Review
- Ensuring Standards of Performance of Members
- Exercise Disciplinary Jurisdiction
- Financial Reporting Review
- Input on Policy matters to Government

Digital Accounting and Assurance Board of ICAI

ICAI has constituted “Digital Accounting and Assurance Board” (DAAB) for fostering a cohesive global strategy on aspects related to digital accounting and assurance, through sharing of knowledge and practices amongst the members. DAAB is endeavoring to identify, deliberate and highlight on issues in accounting (including valuation) and assurance (including internal audit) issues in the digital world. DAAB is focusing on issues in accounting and assurance arising from the high pace of digitization, including use of artificial intelligence in audit, big data analytics in audit, relevance of sampling, valuation of data as an asset, impairment testing of digital assets, insurance of data - valuation and premium fixation, etc. The Board is taking up initiatives to develop knowledge base through position papers and articles on issues relating to impact of technology on accounting and assurance.

FOREWORD

Since its inception, ICAI has emerged as the regulator and developer of trusted and independent world-class professionals having competencies in the areas of Accounting, Assurance, Taxation, Finance, Business Advisory Services and alike. ICAI members have played a key role in the development of a robust Indian corporate sector and its glorious prominence on the global horizons.

ICAI has demonstrated its resilience to the changing situation and growing demands by continuous upgradation of technology, skill set, commitment to quality and constant innovation in the new age areas such as Forensic Accounting, Artificial Intelligence, Blockchain Technology, Data Analytics, and Cyber Security. One of the focused areas of ICAI is continuous competency building of professionals and its actions and efforts are always focused on imperative elements – Global professionals, Independent and transparent regulatory mechanism, highest ethical standards and research-based contribution.

As a knowledge-based institution, ICAI has always been striving for perfection, integrity and assurance which make the word 'Chartered Accountant' synonymous with excellence in service. ICAI is continuously educating its students and members in the field of Digital transformation and we are happy to bring before you a compilation which is first of its kind and will be a one stop reference point that outlines the “ABCD of Technology”.

This Concept Paper on “**ABCD of Technology**” issued by Digital Accounting and Assurance Board (DAAB) of ICAI, is an endeavor to provide overview of the growing trend towards automation and data exchange in technology and processes within the manufacturing industry, including Artificial Intelligence, Cloud and Cognitive Computing, Internet of Things, Industrial Internet of Things, Smart Factories and Smart Manufacturing.

I compliment CA. Manu Agrawal, Chairman, DAAB, and CA. Dayaniwas Sharma, Vice-Chairman, DAAB, and other members of the Board for taking up this initiative for the benefit of profession. I am confident that our members would take benefit of this Concept paper, and will make tangible progress in embracing technology in their professional work.

We, at ICAI, will continue to deliver many such initiatives that are meant to add to the capacity, capabilities, and skills of our professionals with the overall objective of making them the best in the world.

Wish you a happy learning!

CA. Atul Kumar Gupta

President, ICAI

PREFACE

The digital era has made it easier than ever before for criminals to tamper with business accounts and generally defraud others. Of the 500,000+ new businesses that are established every year, the overwhelming majority rely on computers and the internet. The fourth Industrial Revolution additionally identifies with digital twin technologies. These technologies can make virtual variants of real-world tools, procedures and applications. This would then be vigorously tested to settle on financially effective decentralized decisions.

Digital transformation involves the use of digital technologies to make a process more efficient and effective. The idea is to use technology to replicate an existing service in digital form and transform it into something much better. Digital transformation can embrace many different technologies, but the most emerging technologies at the moment are the use of Artificial Intelligence, Robotics Process Automation, Blockchain, Cyber Security, Data Analytics and Cloud Computing to automate and transform processes. Finance processes are often seen as the most suitable candidates for transformation owing to its nature of being rule based and repeatable.

ICAI has leveraged technology and infrastructure to impart world class education, training and professional development by introducing Concept paper on **“ABCD of Technology”** which equip its members with wide variety of skill sets in the field of Digital Transformation and morph them into Indian multinational service providers. Apart from polishing skills in the field of Digital Transformation that will enhance their competence, it will prepare students and members to achieve their organizational and national objectives. This Concept paper outlines the introduction, objectives and the opportunities of different emerging technologies like Artificial Intelligence, Blockchain, Cyber Security, Cloud Computing and Data Analytics.

At this juncture, we wish to place on record sincere gratitude to CA. Saurabh Goenka and CA. Yukti Arora for taking time out of their pressing preoccupations and contributing in preparation of the Concept Paper on **“ABCD of Technology”**.

We would like express our gratitude to CA. Atul Kumar Gupta, President, ICAI and CA. Nihar Niranjana Jambusaria, Vice President, ICAI for their continuous support and encouragement to the initiatives of the Board. We also wish to place on record our gratitude for all the Board members, Co-opted members and Special Invitees for providing their invaluable guidance and support to various initiatives of the Board. We also wish to express our sincere appreciation for CA. Amit Gupta, Secretary DAAB, Mr. Ankur Khairwal, Section Officer and the entire team of DAAB for once again coming up with this wonderful Concept Paper for the benefits of the Members and leading the technological developments in ICAI.

We urge all the students and members to educate themselves in the field of Technology essentials with an open mind and a willingness to adapt and prosper.

Wish you a Happy Learning!

CA. Manu Agrawal
Chairman, DAAB

CA. Dayaniwas Sharma
Vice- Chairman, DAAB

CHAPTER 1: DIGITAL TRANSFORMATION HAS DISRUPTED THE WORLD AS WE KNOW IT

1.1 Understanding Industry 4.0 and the evolution to industry 4.0

The world is not the same today as it used to be earlier. Technology has come in and taken centre stage around which everything else revolved today. What does this mean for the Chartered Accountant and what are all these technologies which are enabling massive change. To understand this, we need to first understand where are we right now and where are we likely headed. This wave of digital revolution is being called Industry 4.0.

Industry 4.0 alludes to another stage in the Industrial Revolution that centres vigorously around interconnectivity, automation, AI, ML and real-time data. Industry 4.0, additionally at times referred to as IIoT (Industrial internet of things) or smart manufacturing, weds manufacturing activities with brilliant smart advanced innovation, AI, and big data to make an increasingly all-encompassing and better-connected environment for organizations that focus on manufacturing, assembling and supply chain. While each organization and association working today is unique, they all face a typical test—the requirement for connectedness and access to real-time data, insights from this data across products, processes and people.

This is the place where Industry 4.0 becomes an integral factor. Industry 4.0 isn't just about putting resources in new innovation and tools to improve manufacturing proficiency but it is also tied with altering the manner in which your whole business works and grows.

1.2 Industry 4.0 Technologies:

Generally-speaking, Industry 4.0 describes the growing trend towards automation and data exchange in technology and processes within the manufacturing industry, including:

- Artificial Intelligence
- Cloud and Cognitive Computing
- Internet of Things
- Industrial Internet of Things
- Smart Factories and Smart Manufacturing

The fourth Industrial Revolution additionally identifies with digital twin technologies. These technologies can make virtual variants of real world tools, procedures and applications. This would then be vigorously tested to settle on financially effective decentralized decisions.

CHAPTER 2: What is Digital Transformation?



Digital transformation involves the use of digital technologies to make a process more efficient and effective. The idea is to use technology to replicate an existing service in digital form and transform it into something much better. Digital transformation can embrace many different technologies, but the hottest technologies at the moment are the use of Robotics Process Automation, cloud computing, artificial intelligence and machine learning to automate and transform processes. Finance processes are often seen as the most suitable candidates for transformation owing to its nature of being rule based and repeatable.

Digital transformation can refer to anything from IT modernization, to digital optimization, to the invention of new digital business models. Digital transformation projects are often the result of competition between large incumbents against faster digital rivals. But it's not just about technology; changing business processes and corporate culture are just as critical to the initiative's success.

2.1 Why is Digital Transformation important?

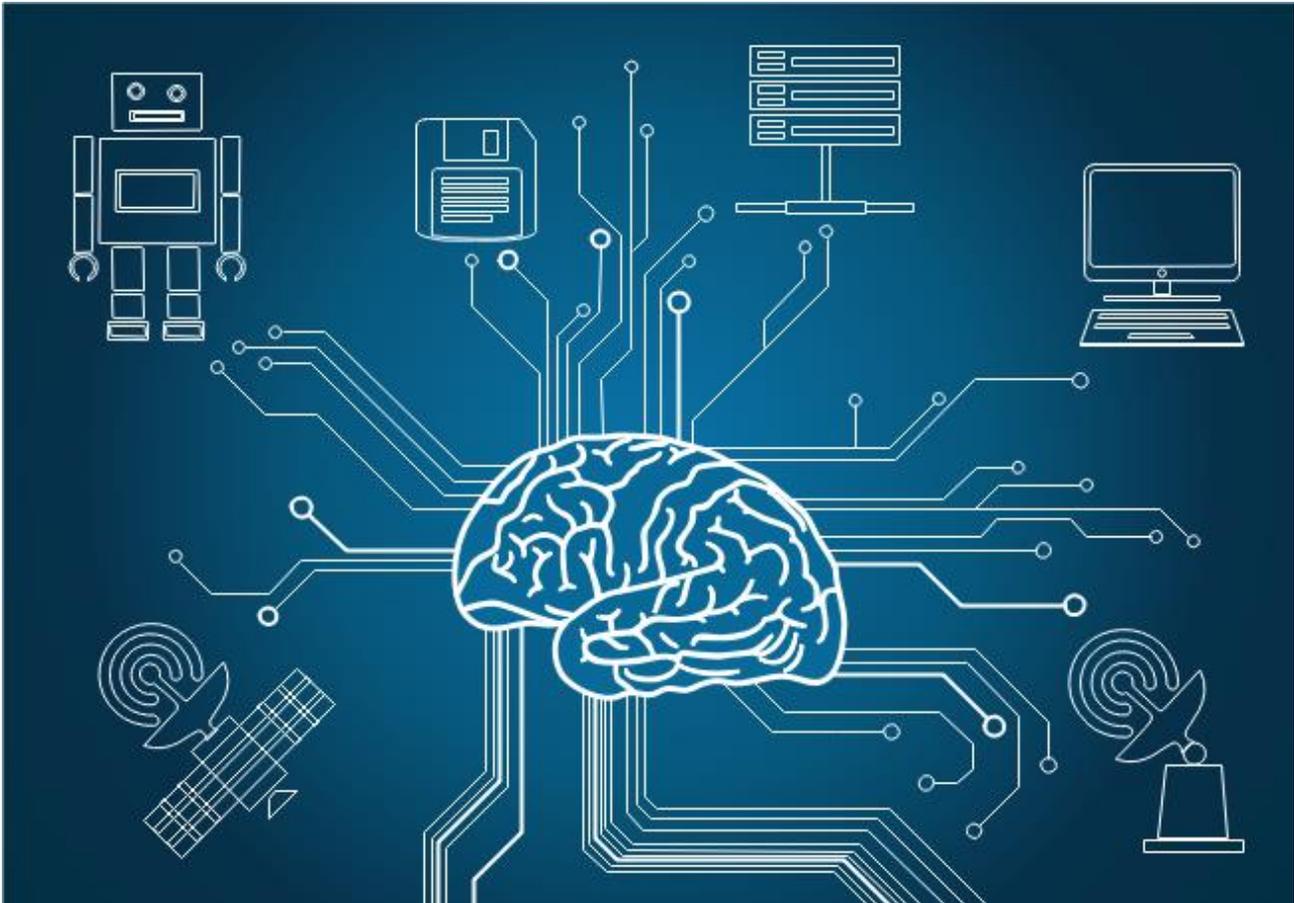
Companies that grasp Digital Transformation are centred around connecting their clients with joyful encounters over numerous channels. Those that aren't risk falling behind.

Digital transformation plays a significant role in:

2.1.1 Customer Experience- Consumers today have more options than any time in recent history. This implies a lot is on the line for organizations to deliver inventive products or services as well as to deliver meaningful service and experience that please clients and cultivate brand dependability. The reasons you may pick one service over the other can be legitimately attached to an organization's

Digital Transformation effort, regardless of whether it's a simple to-utilize application, a transaction, great customer services, or quick deliveries

2.1.2 Process Optimization - A company's capacity to convey incredible employee and customer experiences relies on its capacity to consistently work on the backend. Smoothed out work processes, digital procedures, and robotized tasks are ways companies can generate efficiencies.



2.2 Examples and case studies of major organizations changing the way they operate due to digital transformation

- Businesses are moving away from their stereotypical ways of operation and are rapidly re-innovating their DNA to get in line with these massive digital transformation-driven changes. Here are some examples of how businesses are changing:
- Gartner estimates half of the modern firms will use digital twins by 2021. McDermott International is making a digital twin- a PC model of the oil and gas platform it gives to its customers. The firm expects a 15 percent lift to operational margins by utilizing the design-twin methodology in important areas like predictive maintenance.
- The R² Data Labs team has 200 data architects, engineers and scientists and has helped Rolls-Royce to deliver more than £250m in value through motor health monitoring exercises in the

last one year. Rolls Royce's R² Data Labs utilizes machine learning, AI and analytics to generate new services.¹

- Logistics and Supply Chain organisation UPS as of late launched the third version of its Chatbot that utilizes AI to assist clients with finding rates and tracking their service requests. UPS has set data analytics and data insight at the core of business tasks. The firm is utilizing timely data and advanced AI to assist workers with making better choices in business processes.
- NHS Blood and Transplant, the public sector firm, has been planning and working to accelerate their digital transformation initiative since the last two years. The capacity to fully understand organ accessibility drastically affects the healthcare sector. A few intriguing trials have happened, including around the utilization of predictive analytics and the expected waiting time for an organ.²
- Audi transformed its traditional physical showrooms into modern digital experiences, thereby increasing its sales by over 60% in some locations. Its innovative digital showroom concept is known as Audi City and was launched in 2012. Audi City combines technology and architecture by using multi-touch tables, tablet-user interfaces and power-walls. These power-walls enable shoppers who have configured their vehicles to look inside. Clients can even open the doors or watch the vehicles drive off, along with its authentic engine sounds.³

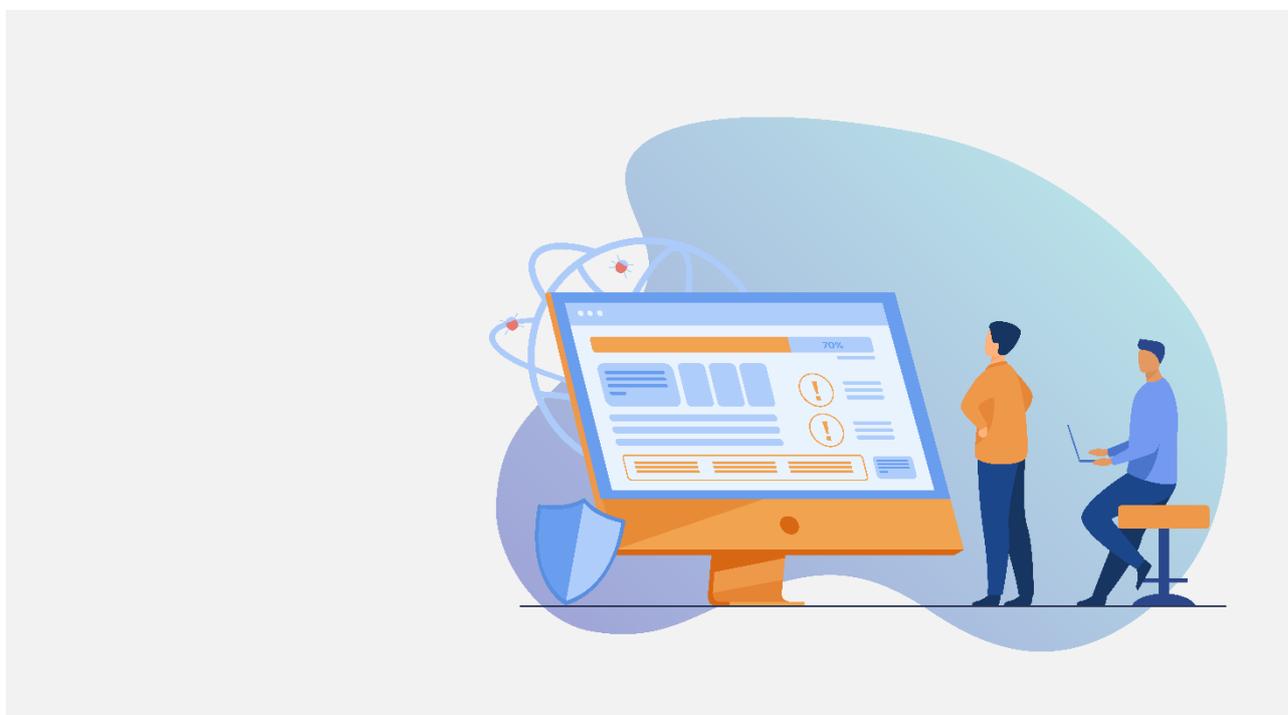


¹<https://www.zdnet.com/article/what-is-digital-transformation-everything-you-need-to-know-about-how-technology-is-reshaping/>

2.3 What does this digital transformation mean for finance as a function?

Digital transformation (DT) in the finance industry is a concept which has now become part of a successful business strategy rather than just being a part of its “technology strategy”. It has led to opportunities of faster, cost-effective operations, meeting regulatory deadlines, improved employee and customer experience and remaining competitive. When you consider how far modern banking has come, you can understand how DT has grown to benefit everyone with greater convenience and experiences. From its humble origins of branch offices to ATMs and now mobile apps, the progress of banking has enabled digital technology to offer greater choice, convenience and experience.

Thanks to digital transformation technologies like real-time data analytics, robotic process automation (RPA) and artificial intelligence (AI), financial management is no longer about looking back. It’s all about looking forward, with predictive insights that yield positive business outcomes at scale. While our industry has undoubtedly been disrupted, it’s also been dramatically improved.



These changes (and their benefits) are flowing far outside of the finance department too: Executives and department heads — CPOs and CIOs included — no longer have to repeatedly report back to the CFO. The basis of an intelligent financial business model is AI, which combines data analysis and automation to transform companies not into silos, but into functions, processes, and orders of magnitude. Intelligent tools allow easy access to critical organizational and financial data. Modern corporate finance leaders oversee a unified and streamlined distributed network, drawing on data from multiple sources such as financial reports, financial statements, business intelligence, data visualization, analysis, financial reports, and more. Aided by applied intelligence and tech-savvy talent, they can optimize working capital and manage revenue, expenses and cash flow.

Take invoice management: An AI-based engine simplifies this process, making every process efficient & effective, algorithms that become smarter as more of them are used can sort invoices based on past payment patterns and histories. They can collect invoices faster, detect payment disputes even earlier and collect and process payments faster. This allows you to quickly focus on solving problems, making sure your bills are paid, and saving time and money, not to mention frustration.

The journal submission process and compliance is another practice where the use of artificial intelligence has significantly improved practice and helped F&A professionals move from reactive to proactive. The AI technology is used to analyse and classify journal entries for accounting codes and other incomplete or missing core details. The AI - automated process tells you immediately if you have made a mistake, and you are able to have a hyper-intelligent virtual assistant to help you do your job faster and more nimbly.

It also improves the accuracy of recorded transactions from 75% to 98% and helps detect fraud and accuracy in recording transactions.⁴

AI detects important patterns that are not always visible to the human eye, such as fraud, fraudulent transactions and fraudulent transactions. This is a great opportunity for a busy finance team to gain time to focus on broader growth strategies.



⁴<https://spendmatters.com/2019/11/26/how-digital-transformation-is-reinventing-finance-and-accounting-departments/>

CHAPTER 3: The Changing Priorities of CFOs Globally

ARTICLE

The CFO and mastering the art of digital process transformation



Technology sector watcher IDC predicts that nearly \$6 trillion will be spent on digital transformation initiatives by 2021, by companies worldwide. That is a radically big amount of finance involved and hence numerous internal spending requests shall be placed on desks of the CFO's at global level. Hence, as a CFO some dominant queries that they need to be aware about are- which digital initiative is worthy of priority? What are the long term and short term impacts on cash flows? What are the cost or FTE savings expected in long and short term if this cost is incurred? This proves that CFO's have to be well-aware of these digital transformation activities, metrics involved, objectives and financials involved in such initiatives. CFO's thus are nothing but internal investors in a company's digital transformation initiatives.

So what exactly can constitute a role of CFO in digital transformation initiatives?

3.1 Starting beneficial cross-functional digital process innovation

It is important to use data collected by various functions like sales, operations and IT across a company, in strategically important ways. Tracking and analysing digital footprint of a consumer across all touch-points of a company could ignite revenue growth and result in some business model innovation.

3.2 Deciding the financial feasibility of digitisation plans

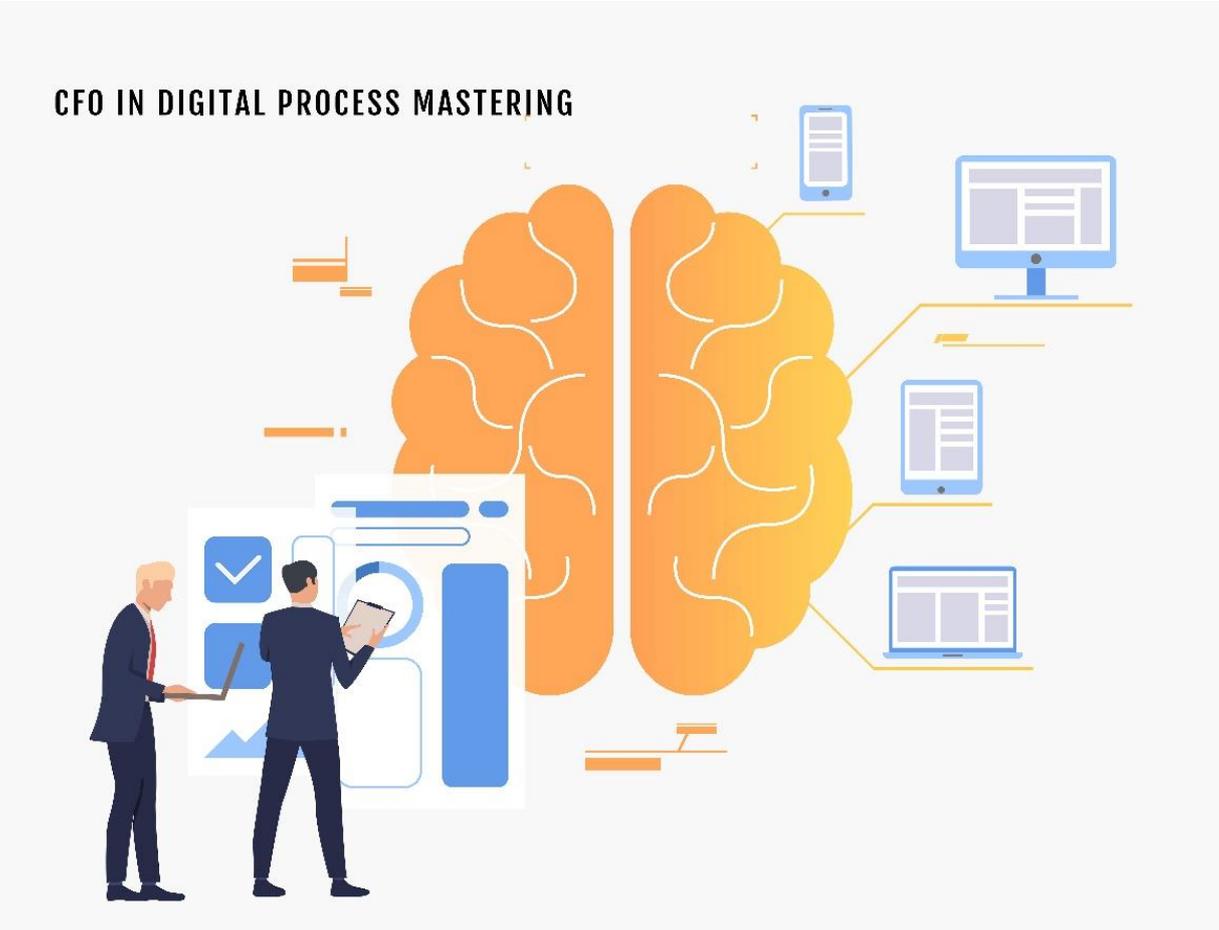
CFO's play a major role in deciding which plans may be financially most feasible for their organisations basis their immediate funding needs and cash reserves, and now and in the immediate future.

3.3 Helping the CIO's decide the IT capacity's working model in a cloud world

A big question CFO's could help their companies to answer is what is our financial justification for shifting to public cloud platforms from on-site computing.

3.4 Propelling the finance function’s shift from redundant manually intensive work to extraordinary automation and analytics driven internal financial advisory

CFO’s should take responsibility for their departments using a machine-first approach. What is meant by machine-first approach? It means determining manual work in finance and determining what all in it can be automated using AI, ML and Robotic Process Automation.



CHAPTER 4:

Key Digital Technologies a CA should be working with – The ABCD of Technology



4.1 A - Artificial Intelligence

4.1.1 What is Artificial Intelligence and how does it work?

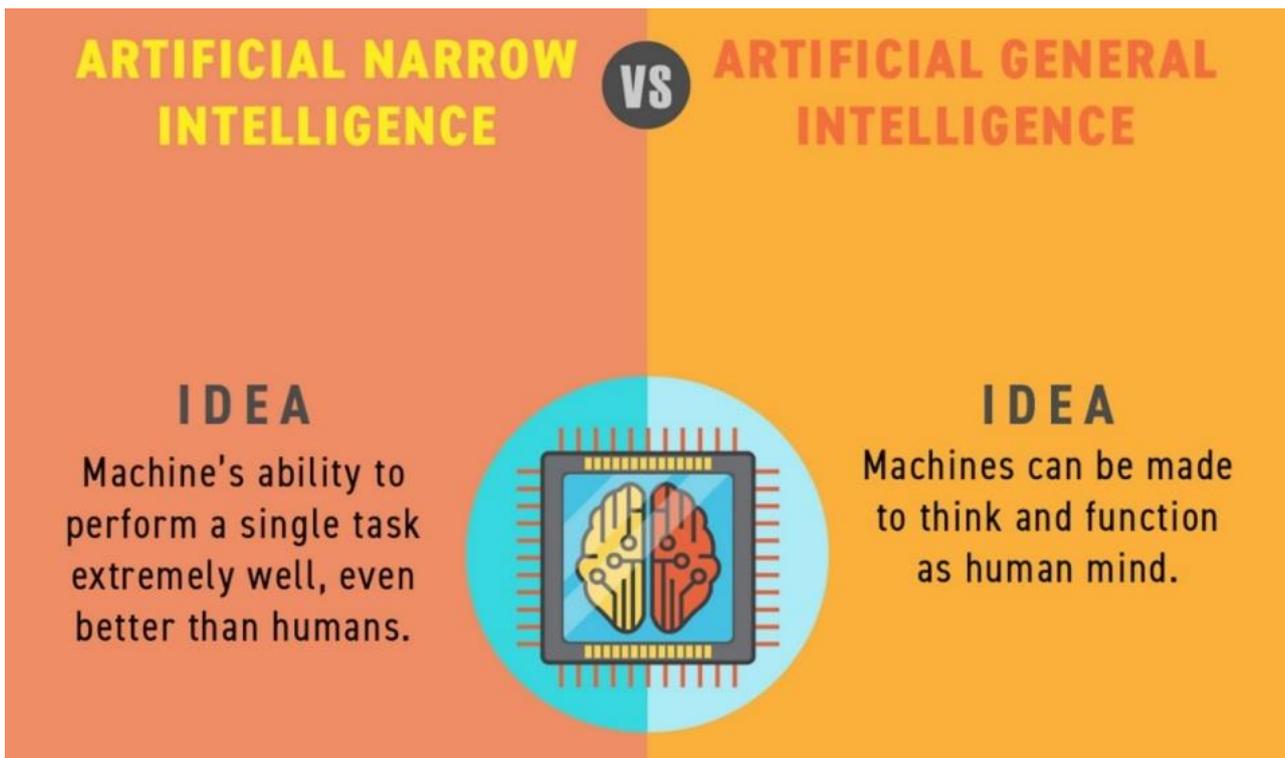
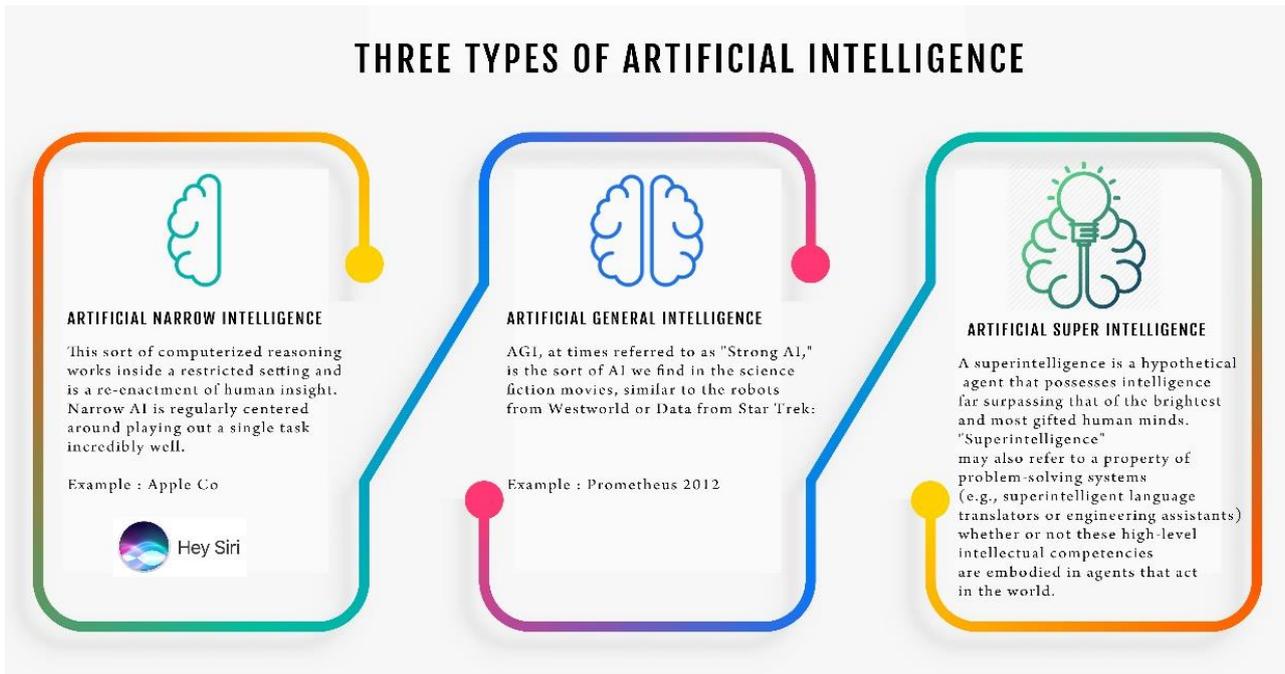
At its core, AI is a branch of computer science that aims to replicate or simulate human intelligence in machines. Some of the defining approaches for AI historically are- thinking like a human, thinking rationally, acting like a human, acting rationally. This includes elements of human thought as well as human behaviour.

4.1.2 Categories of AI:

4.1.2.1 Narrow AI- this sort of computerized reasoning works inside a restricted setting and is a re-enactment of human insight. Narrow AI is regularly centred around playing out a single task incredibly well. These machines may appear to be clever but in fact, they are working under unquestionably a larger number of imperatives and constraints than even the most basic human intelligence. Some instances of Narrow AI include- Google search, Image

4.1.2.2 Artificial General Intelligence (AGI): AGI, at times referred to as "Strong AI," is the sort of AI we find in the science fiction movies, similar to the robots from West world or Data from Star Trek: The Next Generation. AGI is a machine with general human insight and just like an individual, it can broadly apply that knowledge to take care of any issue. Instances of AGI include- TV show, movie or

song recommendations from Netflix, Drone Robots in manufacturing, Disease prediction and mapping tools and smart-phone assistants like Siri and Alexa.

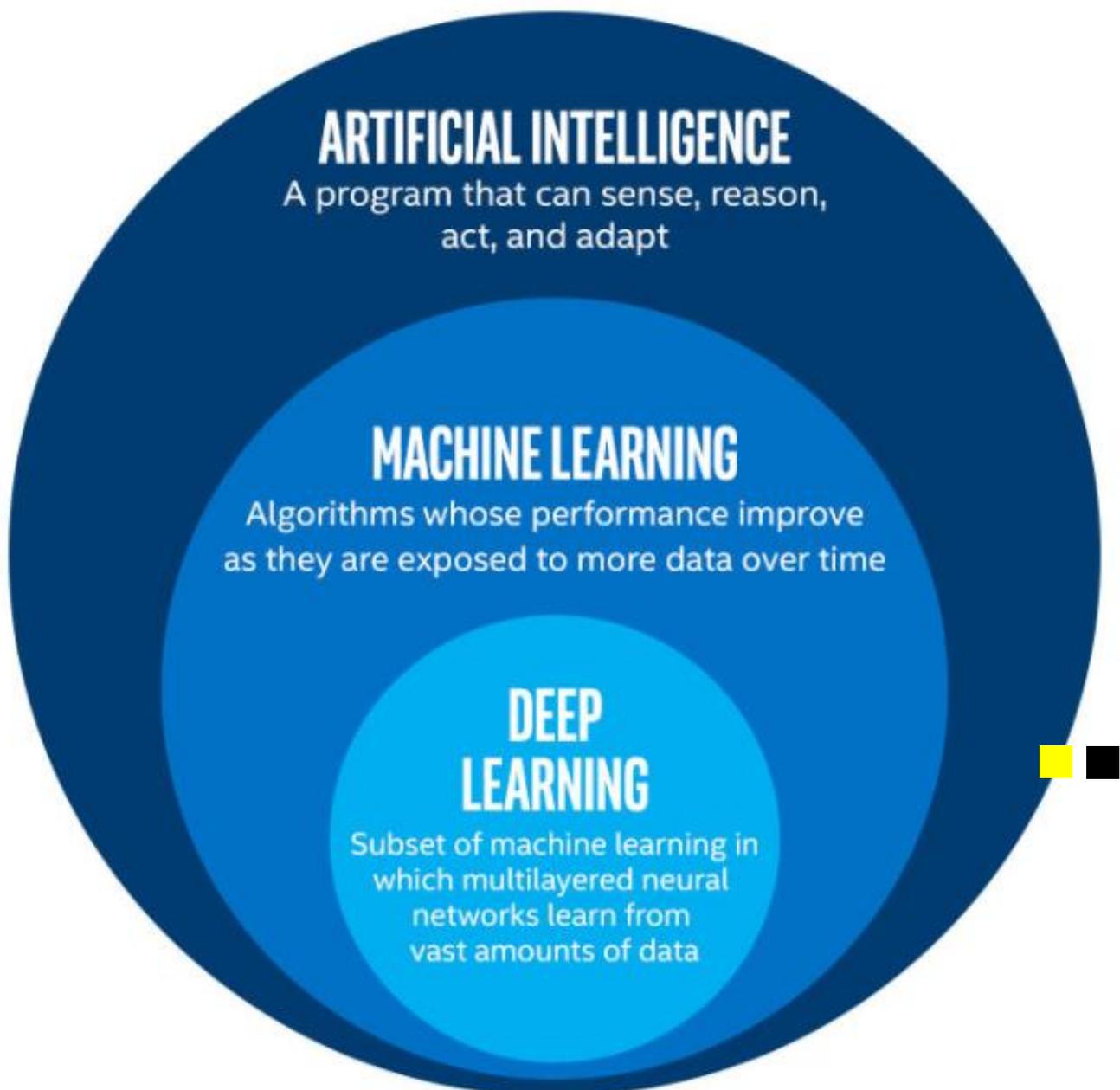


4.1.3 Machine Learning & Deep Learning

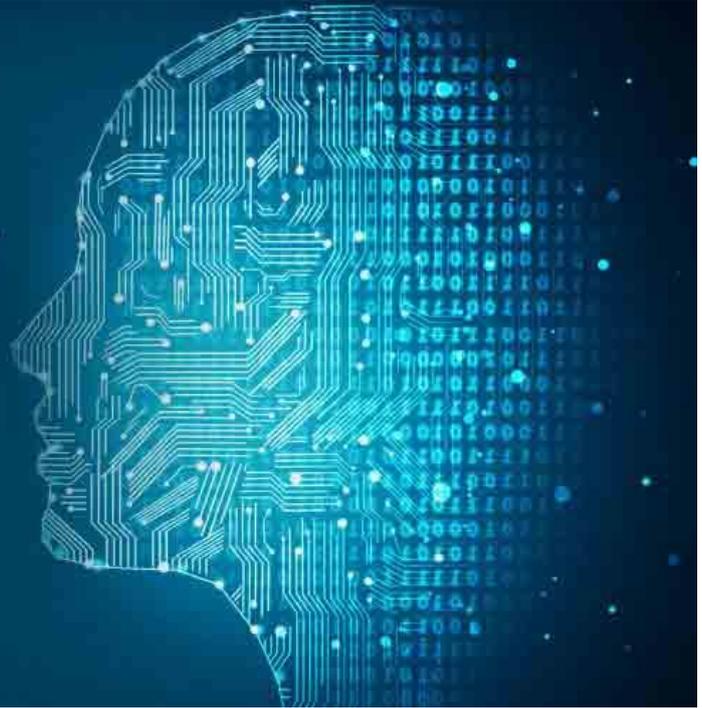
Comprehending the difference between AI, ML and Deep Learning can be perplexing. Frank Chen provides some insight into their differentiation -"Artificial intelligence is a set of algorithms and intelligence to try to mimic human intelligence. Machine learning is one of them, and deep learning is one of those machine learning techniques."

Basically, ML feeds information to a computer and uses statistics and measurable methods to enable it to learn, unlearn and relearn, how to improve at a task, without having been explicitly customized for that task, disposing of the requirement for many lines of composed code. ML is comprised of both-supervised learning (utilizing labelled sets of data) and unsupervised learning (utilizing unlabelled sets of data).

Deep Learning is a sort of Machine Learning that runs inputs through an organically or biologically inspired neural system design. The neural systems (networks) contain various shrouded layers through which the information is prepared, permitting the machine to go "deep" in its learning, making associations and weighting input for the best outcomes.



Advantages of Artificial Intelligence



4.1.4 Advantages of AI:

4.1.4.1 Decrease in Human Error: The expression "human error" was conceived in light of the fact that people commit errors every once in a while. PCs, be that as it may, don't commit these errors on the belief that they are customized and programmed appropriately. With Artificial Intelligence, the decisions are taken from the recently accumulated data applying a specific of calculation and algorithms. Hence, mistakes get decreased and the possibility of reaching accuracy more certainly becomes possible.

Instance: In Weather Forecasting utilizing AI they have minimised most of human errors.



4.1.4.2 Faster Decisions: Utilizing AI along with other different technologies we can make machines make quicker and better informed decisions. While making a decision human will dissect numerous variables and have emotional biases too. However, AI-controlled machines work on what it is programmed for and delivers the outcomes faster than humans.

Instance: While playing Chess games in Windows it is very difficult to beat CPU due to the AI behind that game. It will make the most ideal stride in an exceptionally brief timeframe



4.1.4.3 New Inventions: A lot of complex problems in all kinds of domains and businesses are being solved by AI powered inventions. For example- Doctors can now predict breast cancer in women using AI powered predictions in early stages of the ailment and hence speed up its cure to get best results.

Other than this some other benefits of AI are that it helps drastically reduce repetitive mundane tasks, it can work 24*7 and have a wide array of daily business and personal applications.



4.1.5 Current Uses

1. A machine learning tool that can read documents such as leases, derivatives contracts, and sales contracts. It is programmed with algorithms that allow it to identify key contract terms, as well as trends and outliers. If designed appropriately, machine learning tools could also identify patterns and outliers, such as nonstandard leases with significant judgments (e.g., those with unusual asset retirement obligations). This would allow auditors to focus specifically on the contracts with the highest inherent risk, thus improving both the speed and quality of the audit.
2. An Machine Learning tool developed by an Auditing firm analyses journal entries and can identify potentially problematic areas, such as entries with keywords of a questionable nature, entries from unauthorized sources, or an unusually high number of journal entry postings just under authorized limits. It allows auditors to test every journal entry a company made during a given year; by subjecting all journal entries to testing and focusing only on the outliers with the highest risk, both the speed and quality of testing procedures are increased.

4.1.6 Challenges for Auditors

Audit firms and regulators must overcome several barriers in order for machine learning technologies to reach their full capabilities :

1. **Relevant and Useful Data** - Obtaining relevant and useful data (particularly non-financial data) from clients and external sources may be difficult. Due to statutory and regulatory limitations, auditors do not typically have access to vast amounts of information from data stores like Google or Facebook.
2. **Confidentiality** - Auditors are also bound by certain ethical and client confidentiality requirements, which may limit their ability to access the quality and quantity of data needed to build their training datasets.
3. **Testing ML Internal Controls** - When relevant and useful data is available for use, auditors must understand and test the internal controls over data integrity and validate the completeness and accuracy of the input data in order to rely on the output.
4. **Cybersecurity Expertise** - Auditors will need to work with cybersecurity experts to determine that the client data is secure; otherwise, unauthorized access to financial and nonfinancial data may allow for inappropriate data manipulation that could skew the results.
5. **Audit Documentation** - If the use of non-traditional data increases, auditing documentation standards will also need to change. Rather than simply documenting why certain procedures were performed and explaining why samples were representative of total populations, auditors will need to document their evaluation and application of the data analysis. As a result, future auditors will likely have to work with data scientists to understand the algorithms, similar to how current auditors work with information technology, actuarial, and valuation experts.

6. **Scepticism** - Auditors will need to remain skeptical about machine learning results; the patterns identified may not be accurate or even logical. Because of the inherent limitations of machine pattern-finding, auditors will continue to need an understanding of the individual business and its industry, as well as the external business environment and societal forces.
7. **Human Bias** - Auditors will also need to understand and consider the role of human biases entered to the machine. These include availability bias, confirmation bias, overconfidence bias, and anchoring bias
8. **Auditing Standards for ML** - Given the potential ambiguity of the input data used and results that are subject to interpretation, the auditing standards for machine learning tools will likely need to be formulated.

4.1.7 What does it mean for the CA's and Finance professionals?

4.1.7.1 Risk Assessment

Since the very premise of AI is gaining from past information; it is common and obvious for AI to succeed in the Financial Services domain, where accounting and record-keeping are natural to the business. For instance, let's look at the credit cards business. Today, we use financial assessment as a method for concluding who is qualified for a Credit Card and who isn't. In any case, gathering individuals into 'haves' and 'have-nots' isn't generally effective for business. Rather, information about every individual's habits of repayment of bills or loans, the quantity of loans outstanding currently, the quantity of existing credits cards and so forth can be utilized to redo the loan cost i.e. interest charged on a card so that it justifies the financial organization that is offering this card. Which system has the capacity to swift through thousands of individual monetary records to come to this answer? An AI-powered machine obviously! Since AI is data driven, scanning over these records enables AI to make a suggestion of loan and credit offerings which make historical sense.



4.1.7.2 Fraud Detection and Risk Mitigation

AI has fantastic use cases when it comes to fraud detection and risk mitigation specially in the case of the banking and lending world. The loan a bank gives you is fundamentally another person's money. This is why banks and monetary establishments take frauds extremely seriously. Artificial intelligence is on top with regards to security and misrepresentation identification. It can use past spending practices on various transaction instruments to recognise odd patterns, for example, utilizing a card from another nation only a couple of hours after it has been utilized somewhere else or an attempt to withdraw funds that is uncommon for the record in question. Another magnificent feature of fraud detection using AI is that the framework has no apprehensions about learning. On the off chance that it raises a warning for a regular exchange that an individual corrects, the framework can gain from the experience and make more sophisticated decisions about what can be viewed as fraud and what can't.

Facial recognition technologies could someday be used for fraud interviews as well. The University of Arizona is working with the Department of Homeland Security to develop software that uses facial recognition to identify facial patterns that suggest excess nervousness or deceit during entrant interviews.



4.1.7.3 Financial Advisory Services

As per industry reports, we can anticipate more robo-counselors (robo- advisors) in the near future. With increase in pressure on financial institutions, to minimise their commissions on individual investments, machines may do what humans can't-work for a single down-payment. Another developing field is bionic advisory, which joins machine estimations and human knowledge to give choices that are significantly more effective than what their individual segments provide. Collaboration is critical. It isn't apt to consider a machine as a frill, or on the opposite end, as a perfectionist. An apt balance and the capacity to consider AI as a segment in decision-making that is as significant as the human perspective is the future of decision making in Finance.

4.1.7.4 Detection of Patterns

Machine learning technology could allow CA firms to detect patterns that currently might otherwise go unnoticed. For example, a restaurant might use historical financial data related to satellite imagery of parking lots, guest count information obtained from point of sale systems, and restaurant employee schedules to demonstrate a strong correlation between high revenues and the number of cars in parking lots during peak hours, high customer guest counts, and high employee wages. By recognizing these patterns, the system could identify locations with revenues inconsistent with vehicle counts, guest counts, or wages. This would allow the auditors to focus on restaurants with inconsistencies rather than selecting restaurants on a random basis.



4.1.8 What can CA's do to adopt this technology?



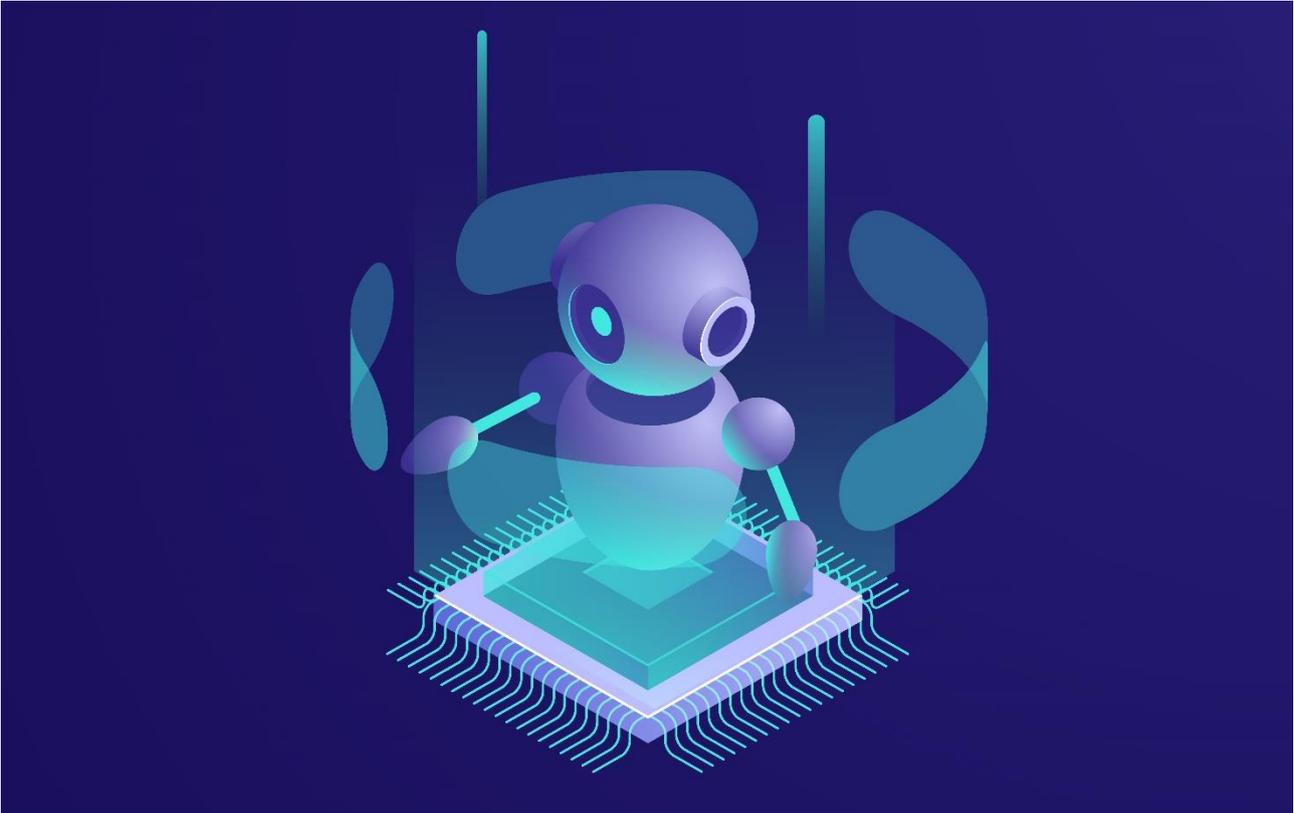
Artificial intelligence as an accountant substitution myth is a fantasy that will be proven wrong in the times to come. Rather, expanded utilization of AI will permit bookkeepers to concentrate on giving better decision support than on data gathering and manual investigations. Expanded utilization of AI will likewise expect accountants to step up and address related dangers with AI through successful administration and implementing internal controls. By holding onto AI and ML as an apparatus, accounts can move where we're investing our energy from performing menial data preparation and investigations to the drawing of analysis from those examinations. Accountant's mastery in controls structure and understanding data biases can likewise be utilized to serve different divisions in the company as the offices try to grasp AI.



A Chartered Accountant, beside assurance roles can play a significant role in providing advisory on AI models, governance and strategy, AI risk management, they can enable review of data governance, data lake and data quality. They can play a role in contributing to analytics rules and models, laying

and challenging assumptions, driving reliable predictive insight leading to automations. Also, they can leverage tools for delivering their assurance role through these technologies to be more agile in leveraging controls and forward-looking on the insights they can bring to decision makers. Internal audit of some business processes could also become more “continuous” and closer to real-time.

4.1.9 A - Automation with Robotics Process Automation



4.1.10 What is the RPA technology and how does it work?

Robotic Process Automation (RPA) means the use of a software robot that can imitate human digital desktop work, and it is by no means the shiny metal robot one might imagine.

RPA is the use of computer software and robots to perform rule-based tasks such as filling out the same information in multiple places, re-entering data, and processing data. Robot-controlled process automation, or RPA, is an automation technology that helps companies to partially or fully automate standardized tasks. It mimics the actions of a human being by performing a variety of tasks, from data collection and data processing to data processing and data analysis.

Many uses of RPA technology are found in real-world applications, such as healthcare, education, finance, manufacturing, retail, etc. Robotic Process Automation (RPA) is a technology that enables employees and companies to configure computers, software and robots to collect and interpret data from existing applications, such as processing transactions, manipulating data, triggering reactions or communicating with other digital systems. It uses preconfigured software entities that use business logic and predefined activities and choreographies to complete one or more independent software

systems that deliver results or services without human exception management. For example, many copy-and-paste activities can be automated by scraping data, entering it into Excel spreadsheets, filling in forms, etc.



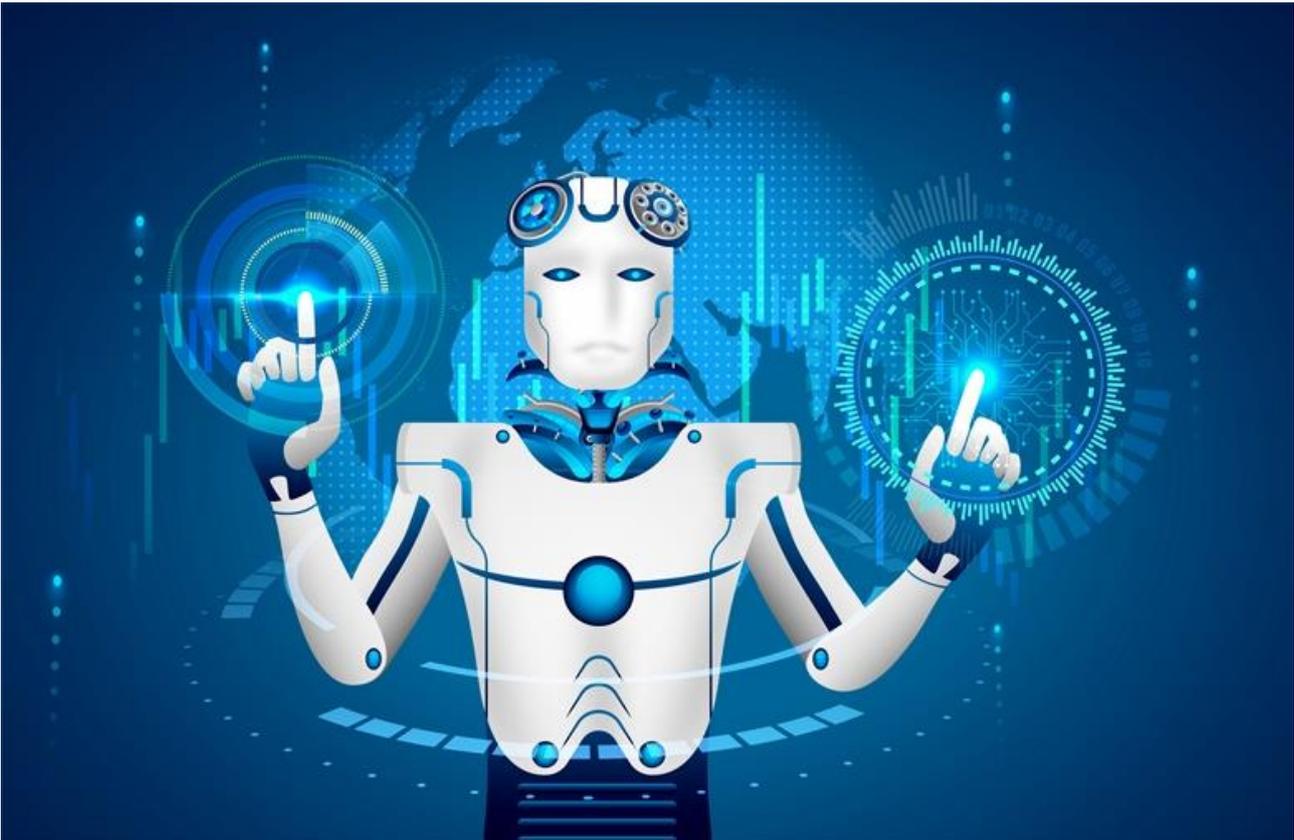
Just as industrial robots have reinvented manufacturing by creating higher production rates and improved quality, RPA robots are revolutionizing support. Many companies are using this emerging technology to eliminate manual and rule-based tasks, improve accuracy, and empower employees to focus on more business responsibility. Companies that deploy workers on a large scale for general knowledge and process work, where people do more complex tasks such as data collection and processing, will increase productivity and save money and time with robotic process automation software. It enables companies to achieve cost efficiency by streamlining processes and improving accuracy. It enables them to leave more and more of their day-to-day administrative work to machines that they can handle well and in full accordance.

It is important that it allows people to concentrate on a job that requires judgment, creativity and interpersonal skills. Automation removes mundane and repetitive tasks and frees human workers from focusing on other high-level tasks.

Also known as RPA 2.0, the idea is able to use machine learning so that it can work without the input of a human user. Unsupported RPA is the next generation, and with it, no one will have to enter data from one system to another. Robotic process automation is not the magic solution to every business problem, but it is a viable alternative to some tasks worth considering. Once an organization's tasks and processes are fit for automation, they can set up the implementation.

Autonomous execution means that the task is performed independently of the software or the BOT(s). Once programmed with instructions, the robot can log into the application, enter data and then log out and log in. Sometimes employees are involved in automating processes with RPA tools, such as solving unforeseen events or performing cognitive actions. RPA helps increase efficiency in the workplace, but in most cases it needs to work with a human team member there to support it.

4.1.11 What does RPA technology mean for the CA and Finance professionals?



Jobs in the financial services sector increasingly involve digesting and analyzing vast amounts of data, ensuring compliance with complex regulations worldwide, and handling repetitive, rule-driven work, making RPA the perfect combination in finance. With the robotic process automation in the financial industry, especially burdensome account opening activities become more precise and straightforward. Until now, banks have led the way, but now virtually every industry is finding ways to integrate them into its operations. The technology is likely to grow faster than any other AI application in the industry and is one of the most promising technologies for the financial services industry. Automation within the banking industry is embedded in one of the most rewarding technologies that helps companies drive their digital transformation, reduce operating costs, and improve the ROI of their previous IT investments.

By focusing on speed, accuracy and cost-effectiveness, it can help transform the business processes of financial services companies and their operations. This means that existing financial and accounting functions, which generate a lot of transactional and repetitive activity, are likely to be optimized for processing by RPA. According to a recent survey by the International Finance Association (IFA), 65% of respondents worldwide said that standardizing and automating processes, as well as building agility and quality in these processes, is a major priority for financial functions.



Robotic Accounting is a new approach to the old and unequal systems in finance and accounting that have had a significant impact on the growth of shared services such as cloud computing, data storage and data analysis.

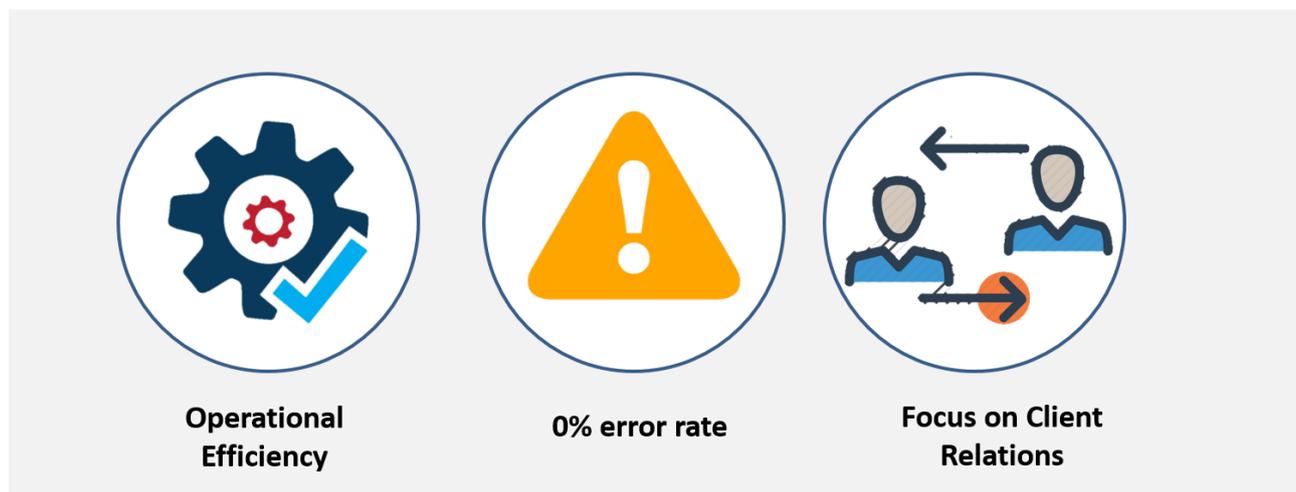
Accounting robots are seen merely as tools that can reduce the effort of moving routine data to other accounting systems outside the application, rather than just one. Accounting robotics is like a bionic arm that can help reduce data movements and work. Accounting with RPA is often perceived as a human substitute, but it is defined as reducing the amount of manpower needed to handle accounting and financial department transactions. It is now widely known in technology circles that if you run an investment firm with an independent auditing firm, or are simply looking for ways to improve your financial operations, consider automation as a way to improve your internal financial and accounting processes.

Bots automate manual financial processes and has the potential to help finance in many ways. It can enable your finance business to provide a better customer experience and potentially support overall success.

A study by the Boston Grouplets suggests that by 2020, more than 80% of current manual business processes will be taken over by automation. It has been known for years that the finance departments of most organisations are understaffed. This is mostly because there is a lot of paperwork involved in collecting, invoicing, creating credit reports and sending emails to customers reminding them of payments. With the use of automation, these manual tasks no longer require human intervention, allowing employees to focus on adding value to tasks, building healthy customer relationships, and developing strategies to streamline processes and ensure smooth workflows. By automating tasks such as invoicing, credit reporting, invoicing, and payment processing, intelligent automation capabilities can enable employees to devote their time and mental energy to more challenging, high-quality tasks. Automation tools can express themselves in a variety of ways, from manual to automated, but the real benefit of smart automation is to create a digital financial organization that anticipates the future and drives innovation, rather than just continuing its historic processes. CFOs now understand that technology has become so powerful that companies are seeking to cut costs, deal with changing business conditions, and spend more time on strategy. RPA for finance and accounting, like many other automated processes, can help ensure better accuracy and a more streamlined process. If your process involves endless searching, matching, comparing and filing, then you have a lot of data to deal with and not enough time for everything. In the continuous accounting process, we often refer to the miserable time when the production of books and financial reporting is clumsily squeezed into a few days. When companies digitize data, manual processes become automatic, putting accounting functions in front of more people without the need to significantly increase staff to complete financial statements. Companies can now take a more efficient and efficient approach to accounting, finance and operations.

4.1.12 Use Cases of RPA in Finance

Here some good reasons why financial institutions are investing in Automation tools and technologies:



4.1.12.1 Operational Efficiency – Financial Services firms process a high volume of client support requests and RPA can assist organizations with automating the manual, monotonous tasks that fill the daily tasks of client care reps: checking request status, opening cases, record updates, and that's only the tip of the iceberg. Reps can get progressively effective as all data is naturally synchronized

between frameworks – operators have all client data along these lines and won't bother customers too much with questions.

4.1.12.2 0% error rate – Assignments and tasks finished by RPA bots are precise and have an almost 0% mistake rate. This implies banks experience less client complaints and call-backs, helping client support reps convey consistently better client experience.

4.1.12.3 Focus on Client Relations – frontend RPA arrangements empower banks to grow their channels of correspondence. For instance, clients can request balance inquiries using different channels like text and Chatbots. Such RPA frameworks automate the tedious repetitive tasks operators manage every day, sparing them time and vitality on improving important relations with clients.



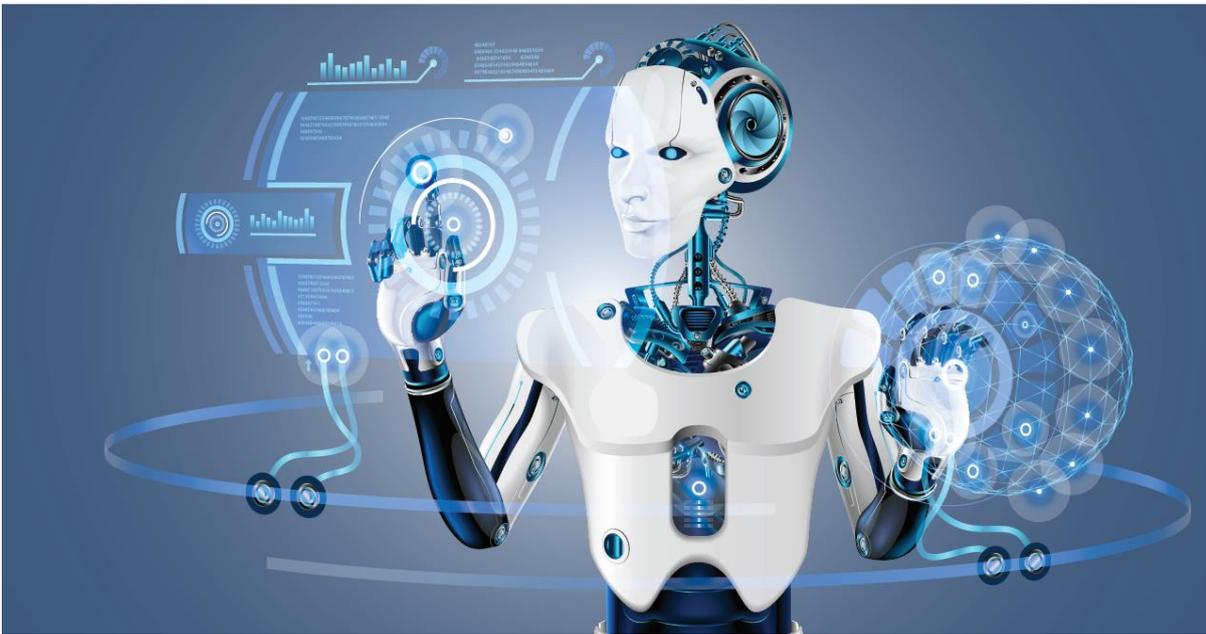
Danske Bank shared some data about their RPA applications in an introduction to the one of the Auditing firm's Finance Agenda. One of them incorporates the automation of the client account onboarding process. The bank has built up a robot that naturally moves data gathered during an onboarding meeting between a bank counselor and a client. Prior to the usage, the counsel expected to enter information into the on-boarding platform and afterward into the client portal platform– where this would usually take 20-30 minutes during each meet, it is currently decreased to insignificant seconds.

BNY Mellon started embracing RPA the right time in 2016 and now utilizes programmed robots to advance its exchange settlement processes, among others. Robots are utilized to finish undertakings, clearing trades, doing order research, and settling disparities. For instance, reconciliation of a failed trade takes an employee about five to ten minutes. The RPA Bot can do this in a fourth of a second. BNY saw an 88% improvement in transaction processing times and account closure validations carried out across five varied systems with an accuracy rate of such procedures being 100%.

Other than these RPA can be used to speed up various other finance functions like- Inter-company reconciliations, Travel and Expense processing, Month-end closing process, Accounts Payable and Accounts Receivable.

4.1.13 What can CA's do to adopt this technology?

RPA is a developing innovation for accounting professionals. With the expansion in usage of BOT auditors will be required to review financials and controls created by a BOT. Hence, professionals need to improve the range of abilities of the expert accountants for this developing technology. CA's can use RPA for tax recording and filing, GST compliance and reconciliation, update mailers, MIS reporting, even they can deliver managed services for a customer by utilizing this technology.



Also CA's can advise the clients on RPA Technology as well as its development for F&A.

RPA isn't supplanting accountants but developing their job and increasing their adequacy through automation. It is a dynamic, positive, and essential move that is making the advanced workspace for accounting and account experts to concentrate on the best worth they can give to their association.

Financial organisations who have implemented RPA with success follow below steps during implementation.



4.2 B – Blockchain

4.2.1 What is Block-chain technology and how does it work?



A Block-chain is a distributed register that maintains an ever-growing list of all transactions on the network distributed over tens of thousands of computers. Block-chain technology is the force behind the digital currency space, and many analysts believe it has the potential to be used for cryptocurrencies as well. When it was founded shortly afterwards, the value of Bitcoin, one of the world's most popular digital currencies, reached \$2 billion, bringing block-chain and bitcoin technology into greater focus. This is a decentralised data structure using blockchain technology, which, unlike conventional technology, has also proved useful in other industries. It is the distributed blockchain architecture that enables the blockchain to maintain an endless list of distributed ledgers without uniform authority to determine which transactions are performed and which are invalid. Although blockchain development was first tested with Bitcoin and Ethereum developers, the public is beginning to realize that the technology's real impact has yet to be unleashed.

For investors new to the world of crypto-currencies, block-chain technology itself can be one of its most overwhelming and confusing aspects. There are many possibilities for block-chain technology, and you may have heard about how you can integrate it into a variety of different industries, such as financial services, healthcare, education, finance, and even the military. But for businesses, block-chains have the potential to create a secure real-time communications network that supports a wide range of business applications, including financial transactions, data storage, and data management. Not surprisingly, technology providers and businesses are rushing to learn how to use distributed ledger technology (DLT) to save time and administrative costs. The recent hype around this relatively new technology is real, as it represents a significant change in the way information is shared.



Blockchain is now an alternative to centralized banking and transaction methods, which will change the way we handle financial transactions and the way we use them. As with any new technology, however, it is not entirely clear how the blockchain's powerful capabilities can best be harnessed. Over time, continued experiments are likely to reveal new ways of using blockchain for a variety of different purposes, and to use it as they make their way into finance. Linking one block to another will pave the way for the creation of a peer-to-peer distributed computing ledger (blockchain) that could record transactions on a global scale. This gives blockchain a democratization factor as a digital computing platform that allows users to conduct transactions without a central authority calling the shots and no one charging fees or fees for transactions. With this platform, autonomous global users who use the peer-to-peer network first manage financial transactions and currencies that are processed over time - stamp servers that are approved by the users themselves. These blocks are secured and connected according to the cryptographic principles of one chain, and each block is secure and binding to the others according to a cryptographic principle or chain. After all, a block-chain is a time - characterized by a series of invariable data sets managed by computers that do not belong to a single company. By allowing digital information to be disseminated but not copied, block-chain technology is gaining attention as a potential solution to the problems of data security, privacy and security.

4.2.2 Challenges to Blockchain in India

While the longer term of blockchain appearance to be bright and promising, it's still thought of to be in its infancy stage, with too several unreciprocated questions about however vulnerable blockchain apps and blockchain app development are often. Despite this, Bharat remains moving forward with its adoption and presently have the subsequent persistent challenges with it.

- The Indian government doesn't have any outlined regulation on distributed ledger technology or any regulation about blockchain technology. This lack of regulation means there's a scarcity of compliance, creating adoption slow.

- For there to be a triple-crown proof of construct on an outsized scale, blockchain consultants should be employed. Not solely is that this dear however current testing on blockchain apps square measure restricted to cryptocurrency solely.
- Also, there's a scarcity of properly masterful and active professionals during this area.
- For public-based blockchain apps, the value of the network maintenance and also the validation of the transactions isn't outlined to any specific individual, company, or organization.
- Due to the technology still being thought of new and also the undeniable fact that there's a scarcity of awareness concerning it, means several potential vendors don't seem to be at the adoption purpose nevertheless. additional conversion concerning blockchain technology has to happen initial.
- Initial Coin Offerings haven't painted a good opinion within the eyes of authorities, stall blockchain comes from being dead.

4.2.3 What does Blockchain technology mean for the CA and Finance professionals?

The foundations of modern accounting began in the Renaissance, when the Italian mathematician Luca Pacioli published books detailing accounting transactions that recorded and offered greater transparency to shareholders. At a time now when companies are under pressure to improve data management and security, block-chain is becoming a way for companies to conduct and review transactions immediately without a central authority. By simultaneously adding a third entry and then posting it in a common register accessible to all eligible participants, the accounting process and data storage will be improved. This should come as no surprise, given that blockchain is an accounting technology that adapts seamlessly to the profession. A growing number of accounting firms are taking block-chain initiatives to better understand the impact of this disruptive technology. These efforts are expected to gain momentum in the coming years, and they are using block-chain to improve the efficiency and security of their business processes.



To further demonstrate this importance, the Block-chain Alliance, a nonprofit trade association that promotes block-chain technology's adoption in the global marketplace, announced a \$1.5 million grant from the US Department of Energy's Office of Science and Technology Policy (OSTP) in 2017

to advance block-chain technologies within accounting. Although block-chain technology was created as the backbone of the cryptocurrency network Bitcoin, it is used in a wide range of industries. All sources agree that blockchain and its various applications represent multiple opportunities for the profession. Why all accountants should care about block-chain is because it offers practical and applicable benefits that are crucial to the accounting profession. The fact that all records of an audit firm are easily accessible to any authorised person is a huge advantage for the integrity of audit firms.

Of course, there must be rules that even govern how authorized companies can access financial data, and block-chain uses smart contracts to accommodate such rules. However, it is important to understand this new technology and its effects, otherwise you run the risk of being left behind and it can cause serious problems. Audit firms can use block-chain technology to save time and money in the audit process. Finally, an immediately accessible decentralised register could make it possible to obtain and verify information immediately. Block-chain technology dramatically reduces the cost and speed of payments and counterparty risk, as transactions are instantly verified and settled. Value retention for banks is one of the most important applications of block-chain technology in the financial sector. Combining block-chain payment mechanisms with approved block-chains and decentralized cloud storage systems would be an ideal solution for storing financial assets and minimizing cybersecurity risks. The credit business could be severely disrupted by the rise of digital currencies such as Bitcoin, Ethereum and Bitcoin Cash, as well as the introduction of new financial services.

Although block-chain is still a young technology, it and its various applications have shown that it has the potential to have a significant impact on the profession. In recent years, block-chain technology has reached a wide range of industries, including banking, insurance, financial services, finance, telecommunications, healthcare, and many more, and is spreading to other sectors such as energy, and transportation. Hence it is worth giving a thought- What role will auditors play in this arena and will they not be the same as they have historically been? In particular, its distributed register simplifies the work of accountants to a certain extent. As this new technology becomes increasingly mainstream, it is likely to replace some of the more mundane aspects of accounting. This could change, although there is no current evidence that modern block-chain accounting technologies are replacing modern financial reporting systems.



Financial reporting systems, for example in the financial services industry, could find a home in block-chain technology. In other words, the future of financial reporting and accounting could fail at the interface of block-chain and traditional accounting.

It is important to determine what the accounting treatment for block-chain based transactions will be once the system's recording and data collection requirements have been completed. It is also a good idea to engage with regulators on the proposed accounting, as accounting procedures can be complex and will have a significant impact on how systems are designed and what data needs to be collected. With a well-designed block-chain solution, a reliable block-chain could benefit the management of financial reporting processes by helping to automate the collection and processing of data such as financial statements and financial reports.

4.2.4 Use Cases of Blockchain in Finance:



Westpac, one of Australia's largest banks, has teamed up with Block-chain (Ripple) to implement its own financial services based on block-chain technology. In 2015, CBA, Australia's largest bank, planned to partner with Block-chain to develop a block-chain centric payment system for its customers.

In 2016, the US Federal Reserve joined forces with IBM to implement a block-chain-based digital payment system for its customers.



The technology is also seen as a landing in human resources, which is bound to change the way HR managers handle large volumes of sensitive employee data and deploy different human resources processes. It could also simplify cross-border payments and automate the transfer of money from one country to another, which would affect companies that hire and operate worldwide. The largest number of block-chain use cases to date concerns the global banking and financial services industry, which is currently battling NPAs and money laundering. The banking industry is a direct beneficiary of the block-chain, as banks can upgrade their systems to meet the rules and requirements for the technology. This explains how the financial services sector is using block-chain to raise awareness of the risks and challenges of financial fraud, fraud prevention and compliance. Credit Suisse, R3, Ipreo and Symbiont fruitfully completed an initial stage of a project connected to the utilization of block-chain technology on the syndicated loan market, in 2016. Seven international banks, in April 2018, specifically BNY Mellon, HSBC, ING, Natixis, BNP Paribas and State Street united to support Fusion LenderComm by Finastra, a syndicated loans block-chain platform.

Maersk and IBM partnered to work on the first cross-border block-chain based supply chain solution, in 2017.

4.2.5 What can CA's do to adopt this technology?

Clients in industries such as capital markets, financial services etc will be the first ones to adopt Block-chain. Other industries will follow sooner or later. Hence, CA's need to understand the basics of block-chain and also figure out which of their clients could potentially implement block-chain. When CA's want to adopt their accounting and processes to account for block-chain they will need to learn new skills such as how to correctly implement business contract steps, terms and actions into smart contract programs because some of their current skills might get redundant in future.



In the event that a huge part of bookkeeping firms' income originates from audit, CA's will need to evaluate the entire time and cost of gathering and arranging transactions data/information for audit purposes. Blockchain can (and will) deter this need out and out, possibly decreasing bookkeeping

firms' income and profitability. Simultaneously, if CA's build up procedures to audit progressively in real time— on the grounds that Blockchain information gets created continuously in real-time, it gives their organizations another method of creating new audit income. The way to distinguish threats and opportunities is to "think Blockchain" when you think about your accounting work, procedures and process streams.

As organizations increasingly explore usage of public or private block-chains auditors need to know the impact potential this may have on their audits as a new source of data for the financial statements. Along with this, they will also have to assess management's accounting policies for digital liabilities and assets which are presently not directly addressed in IFRS or in US GAAP. They will need to understand how to tailor audit procedures to benefit from block-chain and also highlight and address incremental risks arising with it.



4.3 C – Cybersecurity



With every new year comes advanced technology and both old and new ways for organizations to fall victim to various cyber scams. Observing the new technologies, businesses need to be cautious of not just the ever - growing number of vulnerabilities but also of the cyber security threats that are in store.

Cyber attacks will increase, not the isolated hackers that usually occur in our minds, but attacks by nation-state actors to exfiltrate data from governments and corporations.

According to Cyber security Ventures, cybercrime-related losses are set to reach \$6 trillion annually by 2021.

Social engineering attacks or phishing have always been used by attackers to trick victims into handing over their personal information such as passwords, credit card numbers and bank account details. Phishing - carefully targeted digital messages that trick people into clicking on links that can then install malware or leak sensitive data - is becoming more sophisticated. Such attacks allow hackers to steal sensitive information such as credit cards, bank accounts, passwords and passwords or gain access to private databases. While most organizations have improved their email security to prevent phishing attacks, cybercriminals are still coming up with new ways to counterfeit e-mails such as e-mail spam and phishing emails.

The evolving technology landscape has enabled attackers to develop sophisticated phishing methods to steal credentials, data and identities, spread malware and crypto data - and trigger fraudulent payments. Phishing attacks and ransomware attacks will remain the most common types of cyber attacks in organizations in 2020 and beyond.

⁷ <https://onlinedegrees.sandiego.edu/top-cyber-security-threats/>

⁸ <https://www.computer.org/publications/tech-news/trends/5-cybersecurity-threats-to-be-aware-of-in-2020>

⁹ <https://www.indusface.com/blog/top-cybersecurity-trends/>

Although it is a relatively new way for cybercriminals to gain legitimate access to credentials and exploit vulnerabilities in the system, phishing will continue to be the biggest threat.⁸⁹

Cyber security is now more important to businesses than it was earlier, and although companies are now more aware of the importance of cyber security and its importance to their business, many, if not most, find it difficult to define and implement the necessary and appropriate security measures.

Data breaches continue to be reported as the biggest cyber security risk and there is no doubt that personal data will remain a valuable commodity on the black market. Ensuring the security of web applications is a top priority for companies, as web and application errors are one of the main causes of data breaches. This is expected to be a top priority for all organizations and ensuring the security of their web applications, web servers and other critical infrastructures will be a key focus of the cyber security industry in the coming years.

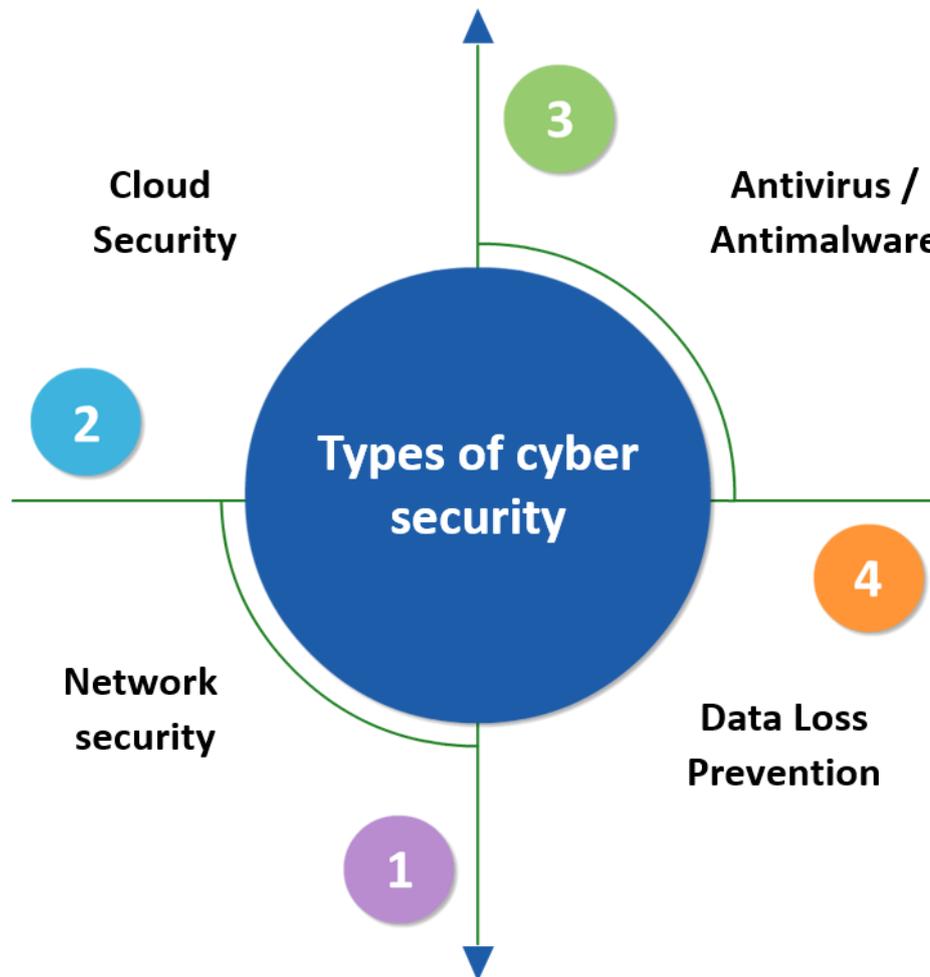
Cyber security appertains to technologies, processes, and practices designed to guard networks, devices, programs, and data from attack, damage, and unauthorized access. Cyber security is important in collecting and storing sensitive information such as passwords, credit card numbers, bank account numbers and other sensitive data. Cyber security is a must for business, organizations or even for our own PC or mobile.



Cyber security is about protecting your computer, network and data from malicious electronic attacks and protecting your personal and business information from cyber-attacks.

Cyber security is important to collect and store sensitive information such as passwords, credit card numbers, passwords and other sensitive information. A strong cyber security system must have multiple levels of protection, spread across computers, devices, networks, and programs, and have multiple levels of encryption and protection.

4.3.1 Common types of cyber security are:



Network security provides businesses visibility and protection from cyber-attacks through comprehensive endpoint defence. It also provides companies with a wide range of threat information, threat analysis and analysis applied to a security platform.

One of the most common ways to protect data is by using anti-virus software, which detects and defends different forms of malwares. Anti-virus software also restrains the malware for future analysis by the administrator.

Cloud Security protects data in cloud based applications and services

Data Loss Prevention protects data which is in use or at rest by keeping an eye on the location.

4.3.2 What is the technology and how does it work?



The concept of cyber security is not new, but in the last 20 years or so, the authorities have greatly expanded its relevance to networks and users. This happened in the case of Capital One, when hackers infiltrated a third-party cloud computing company used by Capital One.⁵⁶

Cyber security will help organizations in examining the evolving risks and impacts of integrated physical cyber security incidents on critical infrastructure and explore what resources can be used to improve security in organizations, businesses and government institutions.

Cyber security is used to protect the virtual world, including computers, mobile devices, networks, computers and other electronic devices from infiltration and attacks by unauthorized persons and organizations.

The number and complexity of cyber-attacks have become a threat to national security and the global economy. Cyber security collects and stores sensitive information such as passwords, credit card numbers, passwords and other sensitive information.

A report on cyber security states “60 percent of digital businesses will suffer major service failures due to the inability of the IT security team to manage digital risk in new technology and use cases.”

Cyber criminals are becoming smarter day and day and are using different methods to access confidential data. Few of the known threats are Malware, Eavesdropping, Zombie, Reverse connection, password cracking etc.,

⁵<https://consoltech.com/blog/what-to-expect-from-cybersecurity-in-2020/>

⁶<https://www.uscybersecurity.net/2020-cybersecurity-threats/>



IT security (also known as information security) is the security of the network in which data is stored. IT security protects both physical and digital data, from intruders. While cybersecurity only protects digital data, digital networks, computers and devices from unauthorized access, attack and destruction.

A strong cyber security system must have multiple levels of protection, spread across computers, devices, networks, and programs, and have multiple levels of encryption and protection. Cyber security technology has the ability to explain to management and forensically show how the attack was carried out.

In 2004, the US launched National Cyber security Awareness Month, and maintaining cyber security is becoming increasingly difficult. While there is no doubt that people and businesses are better connected than ever in today's world, breaking down barriers means keeping pace with the development of new cyber security methods that can compete with the cyber security threats of 2020. It may take a lot of effort to keep the technology safe in our current environment, but it is worth it.⁷

More junior cyber security experts use their programming skills to write tools to automate certain security tasks, but depending on the company's technology stack, there are often pre-built tools that also automate many functions. Meanwhile, high-level cyber security experts must coordinate and organize technical vulnerability assessments, including the implementation of secure infrastructure solutions. They set and recommend technical guidelines for the management of security incidents and ensure the integrity of the resulting processes and approaches.

⁷<https://consoltech.com/blog/what-to-expect-from-cybersecurity-in-2020/>

4.3.3 Impact of remote working due to COVID-19

With the rapidly expanding closure of physical premises, cyber criminals are increasingly targeting all manner of businesses whose staff are working from home. Covid-19 related phishing attempts are on the rise as staff, who may already be feeling vulnerable and anxious as the Covid-19 peril accelerates, find themselves in unfamiliar working conditions and increasingly reliant on resources that may be under pressure.

For some businesses, remote working may have already been in place to some extent prior to the pandemic. For other businesses, the switch to remote working may be something entirely novel. Regardless, if new or extended remote working strategies are hurried through on an emergency basis without full and proper implementation controls, for example if the company has not secured all endpoints and ensured that remote access to the corporate network is properly secure, then the risk of security breach is greater.

4.3.3.1 Personal Devices Usage - Further, against operational systems that are under tension employees may seek to rely more heavily on personal devices with less stringent security controls than those of the company. There is then a risk that the line between company information and personal social media information becomes blurred, and in doing so opens up opportunities for cyber criminals.

4.3.3.2 Employees being less vigilant - Employees may, albeit unwittingly, become less vigilant and less diligent when working under less formal conditions than that provided by the structured office environment. Physically, the risk of misplaced devices is increased, as is the susceptibility to eavesdropping and the unsanctioned viewing of screen content.

4.3.3.3 Cyber criminals are of course alive to, and looking to take advantage of, such weaknesses. As remote working widens, and for indefinite periods of time, so cyber criminals will continue to innovate threat vectors based on Covid-19. A single employee click on the wrong email can lead to unauthorised access to the company's systems and result in significant losses arising out of, for example, liability, data breach, regulatory sanction and reputational damage, which can of course result in significant detriment to a company's share value. In the event of such, policyholder businesses may well be faced with having to show to insurers the extent to which they had control over the computer network systems from whence the breach and loss emanated.

4.3.3.4 Data privacy - Financial data is of course also highly sought and heavily targeted by cyber criminals. The objective remains to obtain company and personal information such as passwords and bank account details etc. and ultimately to obtain money. As remote working broadens, and the aforementioned associated issues manifest, businesses should remain alive to the need to maintain and monitor the security of their own and their employee's personal financial data.

4.3.3.5 Mitigation

There are however a number of basic steps which businesses can take to mitigate such risks:

- Ideally, create a home environment for key employees that resembles the office environment and equipment as much as is possible.
- Establish remote working protocols and include cyber security into crisis management procedures.
- Ensure that IT and security employees are readily and easily contactable and have the appropriate bandwidth and capability to cope remotely with an increased workload.
- Heighten data access controls and restrict access where possible.

- Provide adequate training to staff and remind of the need to be vigilant in the face of increased phishing/malware attempts and the need to report hacking attempts.
- Ensure that home devices and networks are adequately protected, with clear advice on which anti-virus and email-filter software employees may install if required, and via implementing multi-factor authentication.
- Ensure that data that is required to be transported is also done so via protected mechanisms.
- Ensure that data is adequately backed up and capable of recovery and reconstitution, particularly essential data.
- Test such back-up and recovery systems and test incident response plans.
- Regularly install updates to include new patches against evolving threats.
- Log identified malicious attempts and alert employees with regular updates.

4.3.4 What does it mean for the CAs and Finance Professionals?

Accountants & finance professionals must be at the forefront of cyber security to protect the sensitive personal, corporate and financial information they handle.

System security audits are not very different from traditional financial audits, but bridging the knowledge gap will be the difference between a good and a bad audit in the long run. Cyber security experts working for accounting firms are beginning to discover that they can identify problems using the same techniques that accountants traditionally use for their own clients.

Auditors must take into account risks relating to financial statements and annual reports, as the increasing automation of financial reporting and the use of electronic financial files have become a single truth.

As the digital world is changing so rapidly, attackers are looking for loopholes in the networks & software. Finance professionals need to be aware of the different cyber threats such as social engineered attacks, phishing, Trojans, malware.

Cyber security is now part of an accountant's daily work, and cyber threats pose a growing risk to business. Therefore, IT auditors need to change their approach and include cyber security in their fact-finding.

4.3.5 What can we do to adopt this technology?

The goal of implementing cyber security is to create a good security position by storing data on devices without attackers having malicious intentions. Smaller organizations are often targeted by viruses and phishing and need to address security vulnerabilities.

Given that cyber security is a complex and multi-faceted business risk, it is important to engage directors and management to ensure a comprehensive, business-led approach that integrates cyber security issues into decision-making and operations that include the company's information, networks, and data. Therefore, oversight in a management capacity is needed so that organizations can manage cyber security. This is essential to deal with an ever-changing business landscape and ever-evolving threats and risks involving people, processes and technologies across the company.

The threat from cyberattacks is significant and continuously evolving. Many audit committees and boards have set an expectation for internal audit to understand and assess the organization's capabilities in managing the associated risks.

As the second line of defense, what steps can internal audit take?

1. Work with management and the board of directors to develop a cyber security strategy and policy.
2. Identify and act on opportunities to improve the organization's ability to identify, assess and mitigate cyber security risk to an acceptable level.
3. Recognize that cyber security risk is not only external; assess and mitigate potential threats that could result from the actions of an employee or business partner.
4. Leverage relationships with the audit committee and board to heighten awareness and knowledge on cyber threats, and ensure that the board remains highly engaged with cyber security matters and up to date on the changing nature of cyber security risk.
5. Ensure that cyber security risk is integrated formally into the audit plan.
6. Develop and keep current an understanding of how emerging technologies and trends are affecting the company and its cyber security risk profile.



4.4 D - Data Analytics and Cloud

Big data is the term used to describe the enormous amount of digital information that is analyzed and stored to improve business operations. Big Data Analytics is the use of big data to evaluate digital information for useful business intelligence. This data enables companies to provide actionable information that can be used in real time to not only improve operations, but also to optimize applications in the cloud.

The rapidly increasing volume and complexity of data is due to growing mobile data traffic, cloud computing traffic and the increasing development and adoption of technologies such as IoT and AI, which are driving the growth of the big data analytics market. Revenue growth is driven by the increasing volume of mobile and cloud computing traffic in the global market for data analysis, as well as the increase in storage capacity and the expansion of cloud services and service providers throughout the forecast period in terms of revenue growth around the world. The use of cloud computing is important for developers and services to develop analytics for the delivery of global applications in the cloud. As more companies use big data and the cloud, they will be able to accelerate the product development cycle. Big data can provide actionable insights into potential threats and patterns to respond to changing market conditions and open up new avenues. The combination of big data and cloud computing reduces the costs of managing and maintaining data and opens the way to endless possibilities. Cloud computing provides access to a wide range of data sources such as databases, cloud storage and data analysis tools.

Cloud analytics is the use of remote public and private computing resources, to analyze data on demand. Cloud analytics works by enabling companies to use high-performance computing (HPC) and cloud computing services such as Amazon Web Services (AWS), Google Cloud, Microsoft Azure, and IBM Cloud to analyze huge amounts of data. It helps to streamline the process of analyzing and presenting knowledge in order to improve decision-making.



4.4.1 What is the technology and how does it work?

In today's data-driven landscape, companies need to understand how to use big data analytics in the cloud. Business intelligence tools such as cloud analytics provide fast access to real-time data when companies have rapidly changing needs. Cloud-based analytics services also make it easier for companies when they are tied to costly and less flexible on-premise solutions. Hybrid analysis solutions allow companies to test new projects without committing to a local investment.

Cloud computing is growing in the market, and many large companies are starting to build efficient, resilient cloud environments. Cloud-based analytics solutions allow companies to use services only when they are needed.

This is more cost-effective, which improves cloud performance, scalability and reliability, as well as data availability. Ultimately, cloud technology is embraced and promoted as a fast-moving, innovative environment in which teams can use it to store more data and discover new use cases for their data, rather than just storing it in a traditional data centre.

The combination of the cloud's scalability and elasticity with its computing and storage capabilities allows companies to work with large data sets from which they can gain insights that were previously difficult or impossible to determine. With cloud analytics, users can combine internal data in a new way, blend it with third-party data, and get a holistic view of the data, as opposed to a purely historical view.



Cloud computing and analytics help streamline the process of analyzing and presenting insights to improve decision-making. Cloud analytics works by enabling companies to use remote, public, and private computing resources, such as cloud computing, to analyze vast amounts of data. This is a

remote public or private computing resource known as a cloud for analyzing data on demand. Processing big data from multiple sources requires high-end computing systems and networks that are readily available from cloud service providers. Data analysis can be used to ensure that large volumes of "big data" are processed over the Internet even without traditional data centres. Therefore, data analysis has become an important tool for companies to gain valuable insights into their products and services from different data sources.

The accounting world, including the tax world, is likely to require analytical skills from its professionals, as quantitative functions are a key element of the business process and a crucial part of financial management and accounting.

It can help in drawing meaningful insights from the financial numbers to help clients streamline the business process with their overall business strategies. Financial planning and analysis professionals analyze data in hopes of discovering the best course of action for their companies.

Both internal and external auditors are using data analytics to enable practices such as continuous monitoring, continuous auditing, and analysis of full data sets in situations where only samples were audited.

CFOs and finance leaders use Big Data to find patterns in customer behaviour and market trends to drive company strategy.

As a profession that needs to develop these skills, accountants must be at the forefront, as big data becomes central to the accounting and audit process. If they are not trained in this area, custodians of business data become the primary source of information for their customers. Auditors miss out on a seat at the table while key executives make strategic decisions.

4.4.2 Some other uses in Banking & Financial Services Industry:

Fraud Detection: Whether being used to detect ATM fraud, bad check writing, or insider threat, fraud detection is all about finding patterns of interest (outliers, exceptions, peculiarities, etc.) that deviate from expected behaviour within datasets. Using multiple types and sources of data is what allows banks to move beyond point anomalies into identifying more sophisticated contextual or collective anomalies that point to fraudulent activity.

Alternative Dataset Evaluation: With the increase in data available for sale, research teams need a way to quickly analyse that data to identify cleanliness and value before purchasing. Machine learning, particularly via a data science, machine learning, and AI platform, is a good use case here, as it allows research teams to quickly upload data, identify missing values, join new datasets, and run automated machine learning models to determine the predictive value of the data.

Recommending and Upselling: For financial services (and retail banking in particular), in which marketing actions are culturally product-oriented, the right message to a client is paramount. Using AI to look at large swaths of diverse data to determine what products or services should be recommended to someone at a certain moment based on the last interactions can be hugely advantageous to banks that take advantage of this form of hyper-personalization.

4.4.3 What can we do to adopt this technology?

To understand how finance and internal audit departments think and use data, organizations need to hire data scientists into their teams. Once accountants or finance professionals have the knowledge and skills to use the data they work with, they can find ways to develop these skills.

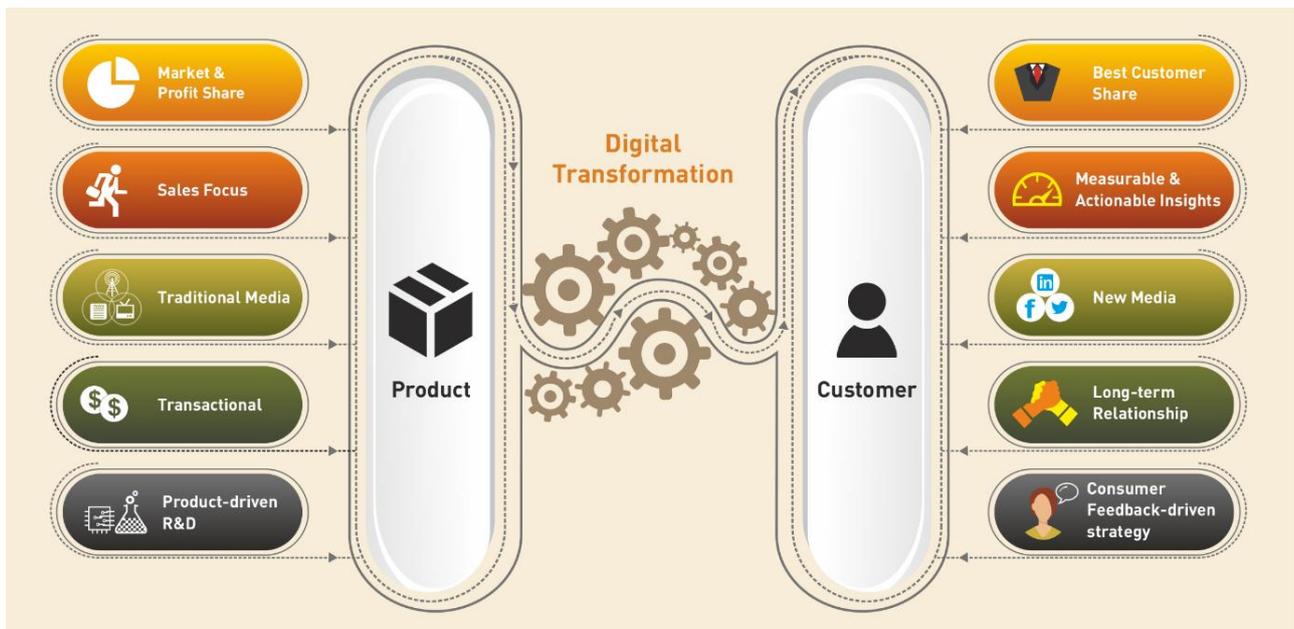
Steps to be taken by firm on Data analytics are: -

1. Firms should expand their assurance services: These services should grow beyond annual financial statement audit opinions. Businesses have larger assurance needs in the areas of data quality, security, compliance, fraud prevention and detection, and internal controls.
2. Auditors should use Big Data and perform deeper analytics: These procedures can help them better understand their clients' environment and use exception reporting to improve audit quality and detect fraud. Every auditor should have the ability to use stronger audit tools than spreadsheets. They should make use of specialists to perform data analytics as part of the engagement, where available, and work with their clients to incorporate more advanced data analytics throughout the audit program within the IT environment.
3. Audit procedures should be continuous: Audit procedures should be performed throughout the year, and audit testing should occur more frequently than annually. Auditors should educate their clients on the advantages of continuous auditing, including reduced errors and risk.
4. Auditing standards need to be updated: Changes in audit approach and procedures are needed to provide the required level of assurance in today's changed business environment.
5. Visualising Data to draw meaningful conclusions as well as to make other, specifically Clients with No financial expertise understand the data insights.



CHAPTER 5: OTHER TECHNOLOGIES

It is important for companies to be more innovative, agile, and digital, but companies that do not track transformations in a multidimensional way may fall behind. These new technologies create significant opportunities and there has been great success with some of them. As technology shapes modern customer expectations, organizations will also change. How quickly customers can get information will change, changing the nature and quality of products and services that customers expect when they interact with companies and other agencies. The best companies in the industry recognize that digitalization requires a shift away from traditional business models and toward a more digitally centric business model. They can make a successful transition to a technology company by fostering a culture of innovation and shifting corporate values to the customer - Centricity. This can be changed by embedding agile development and collaboration and driving enterprise innovation in the form of open source software, cloud computing, and big data. Digital transformation has established itself as a driving force in today's economy and has had a significant impact on businesses and the lives of employees and customers.



The most powerful technologies driving change, include IoT and AI. Some technologies offer little value for operation, while others naturally complement established processes. Awareness of how to use these technologies to increase the efficiency of the company is key to the functioning of the digital transformation.



Internet of Things technology has helped companies to gain a better understanding of their operation in both global & factory perspectives. With IoT, firms are achieving key digital transformation objectives, like enlarged potency, flexibility to respond a lot more quickly to market and client demands, and innovation across their products and services.



Digital twin is a digital replica of assets such as processes, devices, & systems. Social Media has become one of the major platforms for businesses and organizations to communicate with people.

These three have their own unique way in contributing to a successful transition of a technology in a company by fostering an innovation culture and shifting corporate values toward customer orientation.

Digital technologies enable companies to easily adapt business processes and drive higher levels of innovation. While business leaders want to accelerate the organization's digital transformation, it is important to focus on what remains unchanged in order to accelerate implementation and reduce friction for change. This requires a redefinition of the business model, business process and business strategy around the use of digital technologies in the organization.

THE THREE-PRONGED ROLE OF A DIGITAL TWIN



5.1 What is the technology and how does it work?

Digital transformation is the use of digital technologies such as cloud migration and cloud computing to data storage and data analysis. Digital transformation is seemingly everywhere, but it requires a redefinition of the term and the role of digital technology in the enterprise. Digital transformation is not just about the products and solutions you buy; it is about everything you touch and every industry around you. It affects everything, from your customers to your suppliers, your employees and even your business partners.

The best companies in the industry recognize that digital requires a new approach to business processes, business models, and operations. This is changing with the advent of embedded agile development and collaboration, enterprise driven by the use of data analysis, cloud computing, data storage and data analysis, as well as data management and analysis. This is precisely what is happening with organizations that are embarking on new and innovative ways of doing business based on technological advances. Some have made the successful transition to technology companies by fostering an innovation culture and shifting corporate values to focus on customer focus. This is something that is fundamentally changing with the use of digital tools.



Genuine digital transformation is not about implementing more technology into existing models, but about fundamentally rethinking business models and processes. Digital transformation creates new models by improving customer loyalty, leveraging insights from data to offer new products, developing mobile enterprise applications, and becoming paperless. As companies undergo digital transformations, they can implement technologies, processes, and big data to solve traditional business problems.

5.2 What does it mean for CAs and Finance professionals?

IoT, Cloud Computing etc technologies are becoming the backbone of every organisation and every department of that organization. Be it Video Conferencing, Data Sharing, Virtual Meetings, Screen Sharing etc technologies acted as a boon in the Covid-19 pandemic lockdown to support the critical business processes.



Small and mid-sized CA and accounting firms want to find ways to move from a commoditized market to a specialized market. They understand they need to move into high-value services to stand out and be more valuable to their clients. The more time they have open; the more time they can focus on bigger ticket services that bring in more cash flow.

If your people are always busy meeting deadlines for billable work and using what's left for administrative tasks, there's no room for growth. Taking part in the digital transformation by automating essential business practices such as payment collection can give you the space to take your firm to the next level.

5.3 What can we do to adopt this technology?

A survey and report detailing the impact of digital change in finance departments has been published. According to the survey, 98% of CFOs said that their jobs have changed significantly in the last five years, and three quarters said that they now play a crucial role in driving digitalization in their companies. While the majority of them are open to emerging technologies, a large majority (82%) believe that their department is not ready for the introduction of more automated technologies. However, 79% are concerned that the development of artificial intelligence will affect their job security. For years, finance departments were prevented from playing a greater role in their companies "business strategy because they had to combine large amounts of data from multiple applications and then review and analyze that data. With this knowledge, finance teams can provide guidance on how their company should adapt its business strategy to reduce the impact of the data on its financial performance and health. As corporate data is empowered to play a greater role in guiding corporate strategy, one can expect that minds and visionary leaders will soon change to look to the future. Despite

the impression that financial experts are conservative and risk-averse when it comes to recognizing the value of emerging technologies.⁸



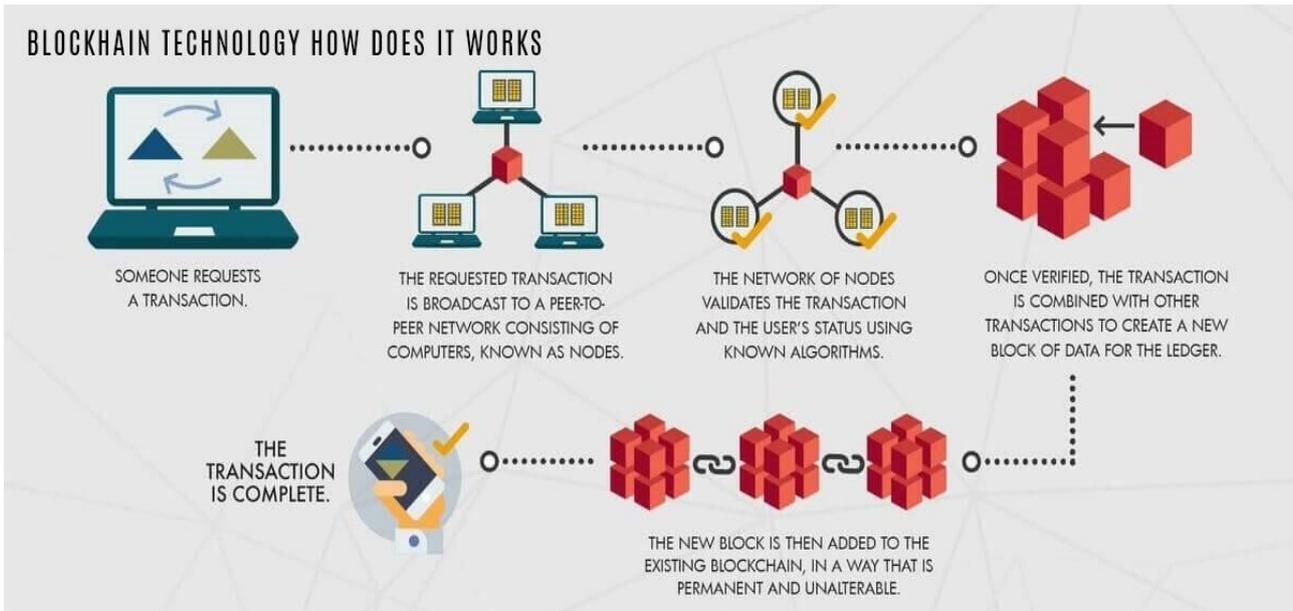
5.4 How Is Auditing Supposed to Change with The Influx of This Digital Wave

As a society, technology is transforming the world at a digital pace, and auditors cannot be immune to the effects. Different occupational groups are rediscovering their roles and orienting themselves towards the technological direction of the future. Accountants switch from opaque policies and old-fashioned insurance, but they don't seem to notice.

Given the rapid and disruptive progress of science and technology, the auditing profession needs to keep pace if we are to remain relevant as auditors. We expect that corporate valuation and reporting will develop a much broader range of information, including non-GAAP (Generally Accepted Accounting Principles) measures. Many of these measures must be ensured almost continuously, but in the meantime several evolutionary steps are required.

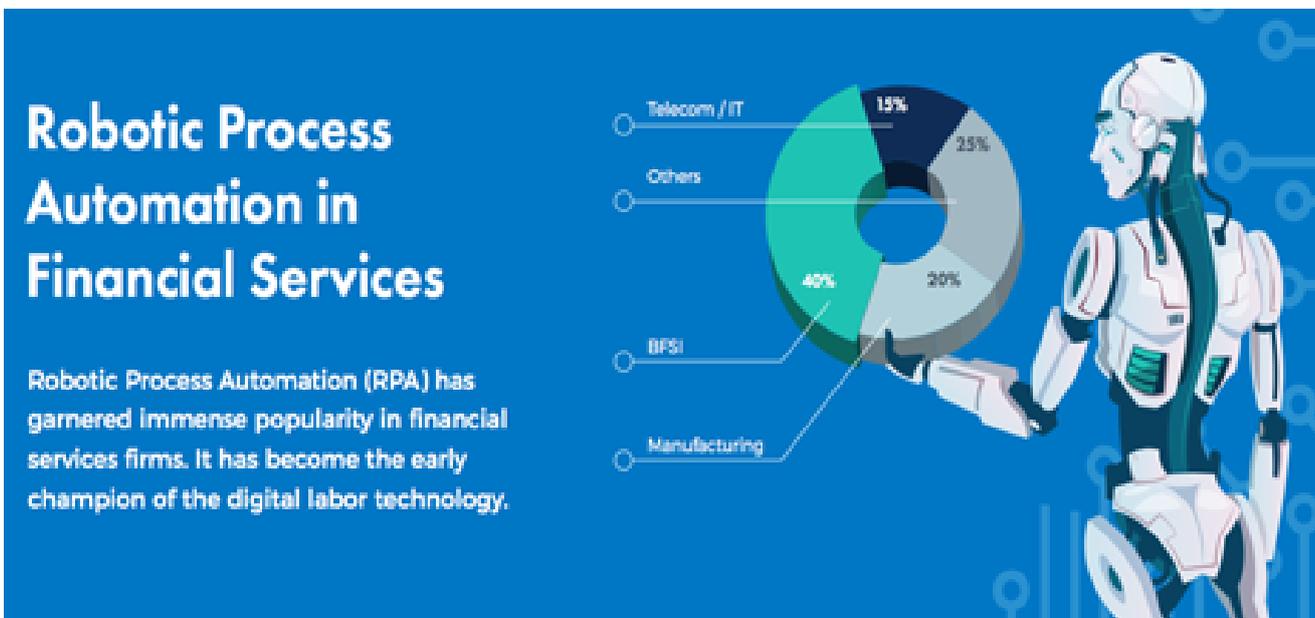
In present, CA's have started using computerized audit tools to increase population coverage and improve risk identification. New technologies also have a significant impact on audit work, such as blockchain, which can help reduce the need to authenticate detailed physical documents and the use of smart contracts.

⁸<https://markets.businessinsider.com/news/stocks/successful-digital-transformation-requires-new-breed-of-cfo-sage-study-shows-1028859390>



Blockchain is a fundamental technology in the proposed project because it can provide data on the origin of a distributed register. Blockchain, a decentralized, distributed universal book, makes transactions invariable and provides a high level of transaction security and accuracy. Auditors can use the platform to submit audit evidence as long as the register is immutable and transparent.

A great example of this technology in action comes from one of the Auditing firms tool, which will help test the effectiveness of a blockchain platform for exchanges and asset management companies that manage and trade assets. The tool helps audit teams collect organizational and transaction data from multiple blockchain ledgers.⁹ The auditors can then query the data, analyse the transactions, identify outliers, and compare them.



⁹<https://www.accountex.co.uk/insight/2019/03/22/audit-technology/>

This technology will allow auditors to work at a higher level and do more meaningful work. Artificial intelligence and machine learning are perhaps the two areas of science and technology that have the greatest potential to determine the direction of future in the profession. Machine learning, a subset of artificial intelligence, uses machine algorithms to do intelligent work that mimics the intelligence of a human auditor. Robotics process automation can perform repetitive tests, and in some cases in a much more efficient and efficient way than humans.

The future of testing will not only revolve around robotics and process automation, but it can also lead to deeper. AI is used to develop Audit models that replicate the collective wisdom of an army of accountants. These machines learn from exam papers and apply the intelligence of auditors to similar data.

Will the development of science and technology eventually lead to robotics and examiners completely replacing the human examiner? The experience and judgment of the examiners cannot be replaced by a machine, but by the judgement and experience of a human Auditor and his colleagues.

This technology consists of tools that quickly extract, validate, and analyze large amounts of data. These tools can be used to support judgments, to draw conclusions, to give instructions for further investigation, or in a variety of other ways.

Is your Internal Audit ready for AI, or are you wondering if AI will replace data analysis as the most important part of your audit process in the next few years?

The short answer is no because the experience and judgment of the auditor cannot be replaced by data analysis of AI.

AI can build a solid database and do even more work for internal auditors by automating and speeding up large, complex data tasks and analyzing large volumes of audits and relevant data to gain greater insight into audit results. Now, AI is not the future, but internal audit departments will be better off adopting and implementing data - analysis and AI work earlier. It is estimated that, AI will perform 30% of all internal audits in companies by 2025 remains to be seen, and given the rapid pace of technological progress.¹⁰

Eventually, Science and technology will fall into the hands of auditors who are leaders in analytics, data analysis, and analytics.

¹⁰<https://www.wipfli.com/insights/articles/ra-internal-audit-how-ai-could-impact-data-analytics>

PROCESS OF FINANCIAL AUDIT WITH TRADITIONAL METHOD IN INDIA



This technology will enable auditors to audit 100% of all available corporate information and carry out more comprehensive benchmarking and market analysis. Data analysis can go beyond random tests to give audit teams and top management a deeper understanding of how companies operate and deliver their financial performance. The introduction of big data and analytics into auditing offers the opportunity to rethink the way audits are conducted. For example, the restructuring of the audit process can be extended from a random test to the use of data analysis, data mining, and data visualization tools such as Google Analytics to get a more complete picture of a company's business and financial results.

This means that the traditional model is exhausted and auditors need to improve their skills to have a more varied, exciting, and rewarding career. However, this technology will not be able to replace the key assessment elements of the audit, leaving crucial elements to the expertise of the audit team and the skills of its staff.

Changes in the data ecosystem make analytics even more intelligent, and Auditors have access to better predictive analytics through machine learning. However, most audit analyses are descriptive and restrict the scope of their analysis and their impact on the audit process.

Exogenous data can be analyzed in real-time, which would provide Auditors with more up-to-date and relevant information. Analytical instruments can, therefore, reduce the uncertainty caused by audit risks and the impact of audit risk on the audit process. The Audit data such as transactions, supporting's, or conclusions can all be captured in real-time and analyzed with AI.

As risk management becomes more integral in an increasingly dynamic and volatile business environment, companies need to understand their inefficiencies. The development of data analysis can be transformative for internal audit but requires a rethink. To remain relevant, internal auditors need to install data analytical processes to support internal auditing to gain a better understanding of the impact of audit risk on the audit process and its impact on audit performance. Internal audit teams and audit firms need to know how data analyses work, what they work for, and how they can be implemented promptly to remain relevant.



Improved interfaces to data visualization mean that data analysis can also be used by non-specialists. Data visualization is a useful part of analytics, but internal auditors need to be aware of the changing landscape and know how to use data analysis and visualization to provide the best service to their customers. It is simply a matter of analyzing the data, bringing it to life, and helping people understand the significance of the results.

The purpose of an internal audit is to assess the performance of a company's business activities and processes in search of improvements and inefficiencies. In general, this means that the internal audit process provides a comprehensive overview of the business and its performance, as well as the impact of changes within the company.

This generally means that internal auditors can use the audit analysis to perform the same audit faster, more cost-effectively, and more effectively. Addressing these issues will lead to a broader understanding of the economy, but could come at the expense of a longer review process. The development of this process at the forefront will lead to higher costs - in the future to efficient audits.

Advances in data science can be used to conduct more effective audits and produce new forms of audit evidence. However, companies need to recruit and train qualified staff to fulfil the required internal

audit functions. The development of the audit data analysis process may also require higher acquisition costs.

This technology enables the analysis of big data to improve understanding of the underlying transaction balance sheets of a company's assets, liabilities, and assets and liabilities. The introduction of analytics will change the way auditors process data from annual financial statements and financial reports. Tests and data analysis methods can be used in test planning procedures to identify and evaluate risks by analyzing data for patterns, correlations, and variations in the identified models. This method can improve the quality of analytical procedures at all stages of an audit and give the auditor a better insight into the financial situation of companies and their financial systems.



CHAPTER 6:

WELCOMING PROFESSION 2.0

Digital transformation is not a new concept, but, given the steady pace of digital innovation, a wave of innovation in professional knowledge has emerged that will drive this new era of change which is being termed as Profession 2.0. While solutions like the cloud remain an integral part of the workplace, the rise of cloud computing, to name just a few, has transformed the IT landscape and driven the second wave of digital transformation which we called Profession 1.0. In recent years, we have seen a number of new technologies, from mobile devices and cloud services to mobile applications and mobile apps.

The ultimate stage is the digital transformation is achieved when the developed digital use has stimulated significant changes in the field of professional knowledge. In recent years, this has enabled many organizations to achieve a degree of digital transformation in order to realize the full potential of their professional services business.

Currently Big data and analytics are transforming the range of industries for the better, top accounting and auditing firms are heavily invested in working closely with leading providers of data analytics software to truly improve audit quality and service. With rising compliance costs, the tide has turned in the financial & accounting sector, with the rise of the cloud and the introduction of mobile applications and mobile apps.

6.1 What is Profession 2.0?

The auditors of the future will use data analysis to verify compliance with regulatory requirements. They will learn how big data analysis changes the audit process and how to adapt to this change. Experts use big data analytics to implement operational strategies and address compliance issues in their organizations.

Effective planning, forecasting and profitability analyses mean a lot to business leaders, but they are also important for auditors.

Fortunately, there are proven ways to improve the financial situation, and many companies have already made significant investments in analytics in this area. As CA firms work to meet growing expectations for added value, the trend is likely to continue for talent to increasingly focus on analysis and interpretation of Data to draw conclusions, including data scientists who use sophisticated algorithms. Advanced analytical solutions are already being found in finance, including predictive modeling.

Blockchain technology is developed and distributed to optimize financial activities and back-office functions. This could also have an impact on the audit process: audit firms are unable to carry out continuous in-line assessments throughout the audit period.

Blockchain can be used to verify the source of reported transactions as a verification source for reporting transactions. One example could be that auditors review transactions in publicly accessible blockchain accounts without having to ask customers for bank statements or send confirmation requests to third parties.

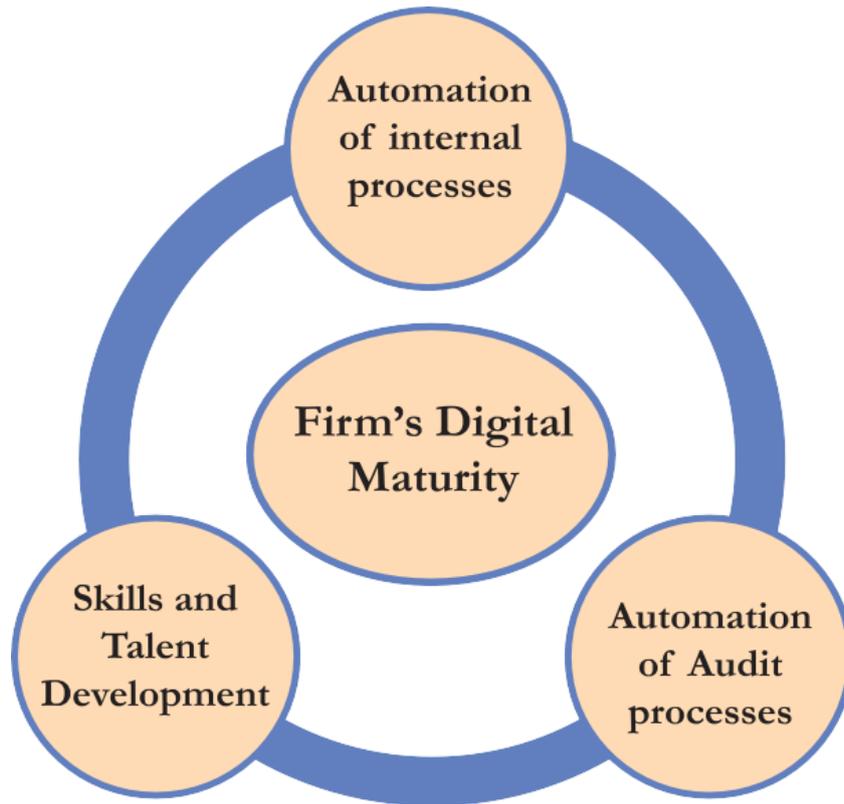
The automation of verification processes will increase cost efficiency in the audit environment. One of the biggest firm believes fully automated audits could be a reality by the end of the blockchain. The use of blockchain to assess financial statements is the first step towards automated auditing of financial institutions and financial services companies.

The pain points and sequence of liquidity cycles resulting from a plethora of data mismatches are all too well known. These include, for example, ordering errors, overbooking, under accounting and to name but a few, including, but not limited to, the pain point sequence of the cash cycle.

For instance in Order to Cash cycle functions, the use of a private blockchain to harmonize all stakeholders' data into a single, common register and make transaction processing visible in real time can have a huge impact on the outcome. Visualization tools can bring analytical solutions to companies faster and enable rapid prototyping that shortens development time.

Visual metrics are also easier for more people to understand and allow analytics to expand into the field of data scientists and quantum physicists. These tools also allow companies to see stories that directly address decisions that matter. Robotics and automation are transforming global manufacturing, upending conventional thinking about the role of human labor and the need for human-machine interaction. But this is just the tip of the iceberg and just the beginning.

	PROFESSION 1.0	PROFESSION 2.0
CA FIRMS AND CAs IN PRACTICE	<ul style="list-style-type: none"> • Tax Filing Services • Traditional Audit and Assurance • MIS and reporting • Traditional transaction advisory • Engagement on demand • Local presence 	<ul style="list-style-type: none"> • Tax Filing Automation • AI and Analytics enabled audit • Advanced Analytics and visualization • Decision impact forecasting • Analytics driven demand generation • Digital presence
CORPORATE FINANCE	<ul style="list-style-type: none"> • Finance as a support function • Responds to business needs • Manual push based reporting • Manual controllership function • Traditional internal audit • Descriptive reporting 	<ul style="list-style-type: none"> • Finance integrated with business • Forecasts business outcomes • Cloud based automated reporting • RPA driven controllership • AI and RPA driven internal audit • Predictive Analytics



Process robotics uses software programs to perform repetitive tasks such as ordering and paying for cash, processing orders and ordering cash. These processes often require a large amount of manual activity,

including data collection and reporting. Innovative automation applications are bubbling up in the form of data analysis, machine learning and artificial intelligence (AI).



6.2 Profession 1.0 v/s Profession 2.0

6.2.1 Digital Competency Maturity Model (DCMM)

Digital Competency in a generic sense of the term has two parts- Digital- referring to “involving or using computer technology” and Competence- “indicates sufficiency of knowledge and skills that enable someone to act successfully and efficiently”. Digital Competency, thus, is a measure of skill and competence on use of computer and related technology. Accounting and Audit Firms have had a fair bit of impact in terms of how they run their firm operations and also adapt and evolve to the ever changing technology architectures at the client side.

ICAI, through DAAB, has initiated a process of laying out self- evaluation matrices for accounting firms to gauge their relative maturity level as regards digital competency, relating to audit and accounting related functions being rendered by firms and individuals.

The objective of this Evaluation Matrix is for Audit and Accounting firms to be able to self- evaluate their current level of maturity on digital competency, identify areas where competencies are good/ lacking, and then develop a road map for upgrading to a higher level of maturity.

6.2.2 Three Dimension Approach to Self-Evaluate Digital Competency of Professional Accounting Firms

Level of Automation of the Firm's internal processes: Intending to cover aspects like, level of usage of IT for its own internal processes like, billing, document management, employee attendance and work tracking, protecting its digital identity like, domain name, social media presence, etc.

Availability of Qualified Resource Pool and Talent Development relating to Digital Competencies Intending to cover aspects like number of skilled staff with requisite qualifications, training initiatives on IT, On demand Online Training etc.

Level of Automation relating to Audit Processes and Nature of Audit Services being rendered Level of automation at client's end, access to automated audit tools, training of employees on audit tools, ability to handle digital evidence, Information Technology Audits, etc.

First Steps

- To assign the task of understanding and presenting the document to all partners and senior staff, to a partner or senior staff who has relatively more interest in Audit; alternatively, to one having interest in Information technology;
- To debate the model in a partner's formal meet of at least 2 hours and make a conservative estimate
- of score for each of the elements;
- To encourage every partner and senior staff to update the checklist in confidence and own
- assessment of score for each of the elements;
- To tabulate the score assigned by each partner and senior staff who participated in the process and finalise the rating with a consensus approach led by the Senior leadership.
- To develop a plan as part of the Annual Operating Plan, for moving up the DCMM. The next steps for this is listed at the end of the document.

6.2.3 Section A: Level of Automation of the Firm's Internal Processes

This section covers aspects relating to what extent an accounting and audit firm has leveraged Information Technology (IT) and related processes for its own operations – from automation of attendance systems to cloud based data back-up, etc. It also addresses issues of data security of client's sensitive data.

Competency Dimension	Score/Point Awarding Basis	Actual Points/Score Achieved
<p>1.1 Managing Digital Identity</p> <p>The firm has registered</p> <ul style="list-style-type: none"> i. Domain name, ii. Uses a corporate domain ID for mails, iii. Has a verified social media presence 	<p>For each Yes- 1</p> <p>For each No- 0</p>	<p>Max. Possible Points= 3</p>
<p>1.2 Operational Process automation</p> <p>The firm uses automation for :</p> <ul style="list-style-type: none"> i. Attendance system ii. Leave management system iii. Mobile device- laptops, PDAs, etc. tracking iv. Internal communication- chats/instant messaging systems v. Centralised file storage system/server vi. Internal work flow and documentation is managed on a digital work flow management system vii. Electronic database pertaining to client's and services being rendered is maintained and updated 	<p>For each Yes- 1</p> <p>For each No- 0</p>	<p>Max. Possible Points= 7</p>
<p>1.3 High Availability</p> <ul style="list-style-type: none"> i. Data back-up is automated process on the cloud/off-line at a different location and same is tested periodically 	<p>For each Yes- 1</p> <p>For each No- 0</p>	<p>Max. Possible Points= 1</p>
<p>1.4 Mobile Devices Data Security</p> <p>Mobile devices and laptops:</p> <ul style="list-style-type: none"> i. Are secured through drive encryption ii. Have end point security deployed iii. Can be remotely backed-up/ content wiped off in case of loss of device (MDM) 	<p>For each Yes- 1</p> <p>For each No- 0</p>	<p>Max. Possible Points= 3</p>

<p>1.5 Data Security</p> <ul style="list-style-type: none"> i. Critical communications are digitally secured (either through digital signatures or passwords/other mechanism) ii. Access to internet is restricted on need only basis and use of data cards is also routed through corporate firewalls iii. Firm has deployed end-point security on all desktops (including access control) 	<p>For each Yes- 1 For each No- 0</p>	<p>Max. Possible Points= 3</p>
<p>1.6 Electronic Payments</p> <p>Financial Transactions beyond a threshold are made through electronic means using Two Factor Authentication from designated devices only.</p> <ul style="list-style-type: none"> i. Min of 15% and up to 40% of all pay- ments are made through electronic means ii. 40% to 75% of all payments are made through electronic means iii. Above 75% of all payments are made through electronic means <p>Note: % is in terms of transaction volume.</p>	<p>Below 15% - 0 Points 15%- 40% - 1 Point 40% to 75%- 2 Points Above 75%- 3 Points</p>	<p>Max. Possible Points= 3</p>
<p>1.7 Copyright and Licenses</p> <ul style="list-style-type: none"> i. Software deployed are backed by appropriate licenses and inventory of licenses are maintained. 	<p>For each Yes- 1 For each No- 0</p>	<p>Max. Possible Point = 1</p>
<p>1.8 Digital Media for Communication</p> <ul style="list-style-type: none"> i. Internal employee portal is maintained with updated content relating to firm’s audit programs, checklists, sample representation letters, etc and ii. E-newsletter is published to it’s employees and knowledge updates are available on portal iii. Employee feedback and evaluation is done online through a portal iv. Mail server is managed in-house/third party service provider with scheduled back-ups/vaulting options enabled to retain mails for defined period of time 	<p>For each Yes- 1 For each No- 0</p>	<p>Max. Possible Points= 4</p>

<p>1.9 Protecting Personal Data and Privacy</p> <ul style="list-style-type: none"> i. Employee related personal information/ HR data in electronic form is secured from unauthorised access ii. Social media checks are carried out on key employees as part of background checks including prior or existing relationship with clients iii. Employees are sensitised on due care to be taken relating to sharing client specific information 	<p>For each Yes- 1 For each No- 0</p>	<p>Max. Possible Points= 3</p>
<p>1.10 Online scans for adverse content</p> <ul style="list-style-type: none"> i. Does the firm carry out, either through a third party or on its own, scan of online content to track any adverse news about the firm/it's employees 	<p>For each Yes- 1 For each No- 0</p>	<p>Max. Possible Point = 1</p>
<p>1.11 External Validation/Certification</p> <ul style="list-style-type: none"> i. Is the firm subject to external validation/ certifications like ISO 27001 etc., 	<p>For Yes – 2 Points For No – 0 Point</p>	<p>Max. Possible Points = 2</p>
		<p>Total Possible Points = 31</p>



6.2.4 Section B: Availability of Qualified Resource Pool and Talent Development relating to Digital Competencies

This section addresses issues relating to skills, qualification of staff (administrative and audit staff) in relation to Information and Communications Technology (ICT), and investment by the firm in providing appropriate training for skill set upgrades.

Competency Dimension	Score/Point Awarding Basis	Actual Points/ Score Achieved
<p>2.1 Skilled resource for managing internal IT infra Does the firm have trained/qualified</p> <ul style="list-style-type: none"> i. System Administrators or in case of cloud deployment- cloud administrators ii. Agreement with service providers for desktop support, hardware maintenance/AMCs 	<p>For each Yes- 1 For each No- 0</p>	<p>Maximum Possible Points = 2</p>
<p>2.2 Training/skill of staff related to office automation How many of the firm's staff are formally trained/skilled in:</p> <ul style="list-style-type: none"> i. Word processing software skills ii. Spreadsheet software skills iii. Database/ data analytics skills iv. Presentation skills v. E-mail and internet skills vi. Use of automated work-flow systems <p>Note: Each staff will be counted only once- i.e., same staff possessing two skills cannot be counted twice.</p>	<ul style="list-style-type: none"> i. 0 to 30% of the staff – 0 Points ii. 30% to 60% of the staff- 1 Point iii. Above 60% of the staff- 2 Points 	<p>Maximum Possible Points = 2</p>
<p>2.3 Skills related to audit in a computerised environment/Information Systems Audit Do staff members possess one or more of the said qualifications</p> <ul style="list-style-type: none"> i. Diploma in Information Systems Audit (DISA) ii. Certified Information Systems Auditor (CISA) iii. Certified in Risk and Information Systems Control (CRISC) iv. Certified Fraud Examiner (CFE) v. ISO 27001 LA/Implementer vi. Any other relevant certifications <p>Note: For the above, articled clerks are to be excluded- only partners, qualified staff and paid assistants are to be factored.</p>	<ul style="list-style-type: none"> i. 0 to 30% of the staff – 0 Points ii. 30% to 60% of the staff- 1 Point iii. Above 60% of the staff- 2 Points 	<p>Maximum Possible Points = 2</p>

<p>2.4 Digital Etiquette</p> <p>i. Does the firm provide its staff with training on drafting mail responses/any other form of digital communication factoring cultural and generational diversity of the client/recipients.</p>	<p>For each Yes- 1 For each No- 0</p>	<p>Maximum possible points- 1</p>
<p>2.5 Protecting against digital threats</p> <p>Does the firm sensitizes it's employees on issues like:</p> <p>i. Cyberbullying ii. Phishing attacks/spear phishing attacks targeting key employees iii. Malware threat indicators</p>	<p>For each Yes- 1 For each No- 0</p>	<p>Maximum possible points- 1</p>
<p>2.6 Content delivery through digital platforms</p> <p>i. Does the firm have an online/on-demand learning portal which employees can access from anywhere</p> <p>ii. Are at least 50% of the total CPEs sessions/training sessions through webinars/podcasts are attended on an average</p> <p>iii. Has the firm subscribed to any digital learning platforms from professional bodies for skill development of its staff</p>	<p>For each Yes- 1 For each No- 0</p>	<p>Maximum possible points = 3</p>
<p>2.7 Access to knowledge base, content search online and evaluating content prior to use</p> <p>i. Access to business knowledge database, market drivers and technology involved in the industry in which company operates</p> <p>ii. Are staff trained formally on content searches related to work and how to identify authenticity of the source (say of case laws, audit check lists, etc.,)</p> <p>iii. Are staff trained on what online content can be legally re-used without IPR infringements</p>	<p>For each Yes- 1 For each No- 0</p>	<p>Maximum possible points = 3</p>
<p>2.8 Creative use of digital technologies</p> <p>i. Are staff encouraged to put IT to creative use, say building an app for statutory due date alerts, alerts relating to professional updates, automating a routine function</p>	<p>If at least 1 such automation achieved- 1 Point For no such automation- 0 Points</p>	<p>Maximum Possible Points- 1</p>
		<p>Total Possible Points = 15</p>

Competency Dimension	Score/Point Awarding Basis	Actual Points/ Score Achieved
<p>3.1 Use of Automated Audit Planning Software</p> <p>i. Does the firm uses any application software/tool for audit planning- including scheduling, resource deployment, tracking hrs/days spent vs. budgeted time, etc.</p> <p>ii. Is the software cloud based and secure access is provided to staff members which has facility to collaborate, digital sign off, etc. ,?</p>	<p>If Yes- 1</p> <p>If No-0</p>	<p>Maximum Possible Points = 2</p>

6.2.5 Section C Level of Automation relating to Audit Processes and Nature of Audit services being rendered

This section focuses on actual audit and related work being carried out by the firm, which uses automated tools to facilitate the audit process or scenarios, especially where complete audit focuses on the IT controls in the client environment.

<p>3.2 Use of External Automated Audit Tools for Data Extraction, Sampling, Analytics, etc.</p> <p>i. Does the firm have/uses automated audit tools for data extraction, sampling (Benford’s law, RSF, etc.) , analytics etc. (like ACL, IDEA etc.,)</p> <p>ii. Are the staff adequately trained on usage of the tools and interpretation of results thereof?</p> <p>iii. Are the audit staff trained on identifying, obtaining and analysing and retaining</p>	<p>For Points i to iii For Each Yes- 1 Point For each No – 0 Point For Points iv</p> <p>i. If for > 5 out of top 10 clients manual processes are used- Negative Marking of 1</p>	<p>Maximum Possible Points = 3</p>
<p>relevant digital evidence pertaining to their audit work?</p> <p>iv. Are there scenarios where client’s core processes are fully automated while the firm continues to use manual audit techniques rather than system driven reviews?</p>	<p>ii. If for < 5 but greater than Zero- No negative marking</p>	
<p>3.3 Use of in-built audit tools/capabilities in client side applications like ERPs</p> <p>i. Has the firm used in-built audit capabilities in client applications say, Audit Management Module in SAP, Oracle Financials, audit features in Tally, etc.</p>	<p>For each Yes- 1</p> <p>For each No- 0</p>	<p>Maximum Possible Point = 1</p>

<p>3.4 Design of Application Level Controls Has the firm participated in the application design stage for any client to suggest internal controls to be built into software they propose to develop/use, say, maker checker controls, segregation of duties, audit logs, etc. in financial software like accounting, payroll, inventory management, etc.</p>	<p>For each Yes- 1 For each No- 0</p>	<p>Maximum Possible Point = 1</p>
<p>3.5 Carrying out Risk Assessment for the purpose of audit planning Does the firm have a process of reviewing IT controls and risk of failures of the same vis- à-vis impact on audit planning, including but not limited to audit sample size selection, focus areas of audit, etc.</p>	<p>For each Yes- 1 For each No- 0</p>	<p>Maximum Possible Point = 1</p>
<p>3.6 Information Systems Related Audits/ Reviews Has the firm carried out audits relating to :</p> <ul style="list-style-type: none"> i. IT Security –General Control Reviews ii. Financial fraud investigation involving digital forensic reviews iii. Application Security Audits iv. Technical reviews like, Vulnerability Assessments, Web Application security testing, etc. v. ISO 27001: 2013 reviews 	<p>For each Yes- 1 For each No- 0</p>	<p>Maximum Possible Point = 5</p>
		<p>Total Possible Points = 13</p>



6.2.6 Firm Maturity Rating

Section Reference	Total Possible Points	
Section A	31	<ul style="list-style-type: none"> • Less than 9 Points : Level 1 Firm • = or >9 Upto 18 Points : Level 2 Firm • >18 Points : Level 3 Firm
Section B	15	<ul style="list-style-type: none"> • Less than 5 Points : Level 1 Firm • = or >5 Points Upto 9 Points : Level 2 Firm • >9 Points : Level 3 Firm
Section C	13	<ul style="list-style-type: none"> • Less than 4 Points : Level 1 Firm • = or >4 Upto 8 Points : Level 2 Firm • >8 Points : Level 3 Firm

Level 1 Firm: Indicates that the firm is in nascent stages of adapting ICT and other digital technologies.

Recommendation: Take immediate steps to upgrade its digital competency or will be left lagging behind.

Level 2 Firm: Indicates that the firm has reasonable adoption of ICT and other digital technologies.

Recommendation: Take steps to reach the next level of digital competency.

Level 3 Firm: Indicates that the firm has significant adoption of ICT and digital technologies.

Recommendation: Focus on increasing score to full points in each of the sections and to leverage present status to be in the forefront of use of technologies like, Artificial Intelligence and innovations like, block chain, use of drones, bots, etc. for conducting audit.



6.2.7 Key skills needed to digitally transform and implement the ABCD of technology

- Analytical mind set: Possesses an inquiring nature and intellectual curiosity.
- Understand the application of new technologies
- Skilled at human-centred design
- Agile Thinking: The ability to consciously shift your thinking when and how the situation requires it
- Understand and manage risks in the Digital world
- Innovative thinking and design thinking skills
- The willingness to learn constantly and acquire new skills
- Knowing about industry solutions using digital and contributing
- Building your toolbox: You can find some amazing tools to help you or your firm getting digital transformed and ready for the Profession 2.0.

Technology	Tools
Artificial Intelligence	<ol style="list-style-type: none"> 1. Google AI 2. Create ML 3. Microsoft Azure AML
Automation - RPA	<ol style="list-style-type: none"> 1. UI Path 2. Automation Anywhere
Blockchain	<ol style="list-style-type: none"> 1. Hyperledger 2. Ethereum
Cybersecurity	<ol style="list-style-type: none"> 1. Intruder 2. Malwarebytes
Big Data & Data Analytics	<ol style="list-style-type: none"> 1. Microsoft Excel 2. Tableau 3. R 4. Python
Cloud Computing	<ol style="list-style-type: none"> 1. Amazon Web Services 2. Microsoft Azure

Conclusion

Future Outlook

The global market for digital transformation is expected to flourish in the future and to grow at a significantly higher CAGR. While technology replaces jobs, it creates industries that most of us can't even imagine, and new ways to generate income. New jobs will be created in sectors such as health, education, health, manufacturing, finance, retail, transport, hospitality, tourism, agriculture, construction, mining, energy, food processing and transport. The increasing adoption of cloud platforms is a key factor in the growth of the market. The market for digital transformation is enormous and is therefore expected to expand over the forecast horizon. By optimizing end-to-end automation initiatives and making projects more efficient, RPA can help close the gaps with powerful complementary technologies, reduce costs, and increase productivity. To realize the full potential of automation, companies should combine it with other technologies such as data analysis, machine learning, and artificial intelligence (AI). To succeed in the modern business world and continue to connect with your customer base at a valuable and meaningful level, today's business leaders must foster a culture of continuous learning.

Recent research shows, a global demand in the digital transformation market will increase from an estimated \$299.3 billion in 2018 to \$1223.97 billion in 2026, with CAGR increasing 19.25% over the forecast period, as per the new report from Transparency Market Research (TMR).¹¹ With proper guidance business can grow and succeed with the use of digital technologies such as cloud computing, cloud storage, mobile devices, data analysis, and social media.

Digital transformation services help companies to realign their business processes and technologies in order to gain a competitive advantage in the market. The increase in digital technologies such as mobile devices, cloud computing, mobile phones and cloud services is changing the business environment. Depending on the type, the market is classified into mobile devices, tablets, cloud computing, mobile phones and cloud services.

The digital transformation market has the potential to drive the market in terms of sales, imports and export revenues. It includes a wide range of products and services as well as emerging technologies and trends in the digital transformation market.

What does the job of the future look like?

By combining advanced technologies and digital skills with human skills there are higher chances to achieve high levels of productivity. The fact is that digital change is affecting the skills the market needs, just as the creation and a decrease of typewriters lead to a new scope of jobs. There are chances that by providing digital tools to manufacturing workers, the job can be completed more effectively. Emphasis must be placed on preparing for work in the new digital technology, and not only on those who currently specialize in IT. Humans will constantly have to acquire new skills that enable new ways of working, including working with intelligent systems and machines. As jobs and roles become increasingly valuable - based on a shift away from traditional processes and process improvements - employees will also need to be better qualified to use automation to explore a more creative way of working. There is no shortage of digital skills worldwide, and by training employees with relevant digital courses and equipping them with the skills needed to develop their talents, companies can ensure that digital transformation remains at the heart of every business strategy. By taking the initiative to

¹¹<https://3wnews.org/uncategorised/31510/global-digital-transformation-market-2020-positive-outlook-and-future-growth-strategies-eminent-players-are-microsoft-adobe-accenture-capgemini-ibm-oracle-google/>

identify the weaknesses in an organization, one can close them and put in place processes to ensure that new tutorials accompany the new trends. RPA can be a great tool for solving automation problems and getting companies to grow into a digital workplace. However, it is only part of a much broader picture of the future of business transformation and employment opportunities.

This is especially true in the global financial services industry, where leaders are empowering their workforce to fill skill gaps with digital skills, and to address technological automation with a sense of confidence, not fear or complacency. Fortunately, digital literacy is on the rise, but the future of work is different from five years ago. As we move forward, we want to analyze how technology can transform the workplace in the short term and trigger future employment trends. This includes examining the processes and tasks carried out by the use of new technologies, as well as the question of how the current work continues.

Technological progress has the potential to enhance individual skills and create employment opportunities, including new career paths. In addition, there are many business leaders who are committed to ensuring that the new technologies used for the benefit of the company are not at the expense of employees. The problem is that companies in the midst of digital transformation must face up to the long-term impact of new technologies on their employees and careers. Realizing the potential benefits resulting from the implementation and use of the latest technologies is a key component of the organization's strategy for the next decade and a half.

Risks associated with digital technologies and managing risk

Most of the large organizations find it difficult to understand the right security experts for specific applications, where data volumes are often stored and relatively new technologies are emerging. It is difficult for organizations to know where their data is stored and shared and how it is accessed. As there are fewer human points of contact in the IA process, anticipating the potential of unusual circumstances in testing and monitoring is crucial. Risk management teams need to adapt their thinking and approach to these new technologies in order to reduce design risks and identify unintended consequences of the new digital landscape.

The digital age is changing the face of risk management, and organizations need to stay at the forefront of the evolving risk landscape more than ever. Today's hyper-connected digital world creates a plethora of new risks, while making certain existing risks even more prevalent than they were a few decades ago. Consider just a few ways in which the risks are changing: today, the ability to store and transmit personal and financial data opens businesses and their customers to the constant threat of data breaches. New digital technologies are emerging to help organizations drive their business, but these risks can be difficult to manage.

One of the most important decisions companies need to make in order to successfully address risk management programs is the effective use and integration of digital technologies in today's digital age. For example, mobile crisis management platforms transform extensive risk management data into a digital playbook embedded in business processes such as risk reporting, risk analysis, and risk assessment. When a company conducts most of these processes online or in the cloud, a special risk committee or organization needs to be more interactive to convey how visibility in understanding business performance can help the board better manage expected risks.

Creating a roadmap for yourself / your firm

A high-level roadmap for digital transformation based on the business architecture concept consists of four phases: (1) assess external and internal situations, (2) develop strategy and assess business impacts, (3) architect business solution, and (4) establish initiatives and deploy solutions. Some of them may overlap, but the important thing is to keep phases in a sequential order.

1. Assess external and internal situation

1.1 Analyze external forces and trends. Analysis of external forces and trends needs to list broader and specific environment factors that influence the company. PESTLE is a good framework for analyzing broader environment factors.

1.2 Identify and prioritize customers' and other stakeholders' needs and wants. Identification of all stakeholders, understanding their interests, and their prioritization is the following step.

1.3 Analyze digital technologies suitable for enhancing customer experience. Getting to understand the whole spectrum of digital technologies and engage into deep dive with the most promising ones is the next step.

1.4 Analyze people and cultural potential for changes. Understanding the competencies, motivations, reward system, as well as organizational culture, and their potential to adjust to the new realities of using digital technologies, is something that should be done as a next step.

2. Develop strategy and assess business impacts

2.1 Define different business scenarios. Scenario planning makes uncertainty a part of the planning effort. By developing scenarios with varying degrees of probability, management can perceive the potential future in alternative ways, which widens their horizons, forces them to think about opportunities and risks, and increases their responsiveness to various unfolding events.

2.2 Define target customer segments and technologies to be used. Defining customer segmentation, and exploring and analyzing the needs and wants of each segment is the next step. The needs and wants of each segment are being incorporated into the appropriate value streams and matched to the best technology solutions for supporting these value streams.

2.3 Develop to-be business model. Understanding of the different factors that characterize the current situation in the environment and the company, various business scenarios, and customer target segments with appropriate technologies that will support meeting clients' needs and wants, shapes the domain in which the business model development should take place.

2.4 Develop goal/objective hierarchy. Strategy may be represented as a hierarchical goal and objective chain. On the highest-level of this chain are strategic goals that are being cascaded on several levels of objectives.

2.5 Analyze objectives/business architecture impact. Analysis of business impact of the defined objectives is greatly eased off by the cross-maps between different core and extended architectural domains.

2.6 Analyze business architecture/IT architecture impact. IT (information technology) architecture represents blueprints of the technologies, data structures, and applications that collectively comprise the IT environment of a company. Business/IT architecture impact should develop understanding on how strategy and other business architecture domains affect technologies, data structures, and applications.

3. Architect business solution

3.1 Visualize to-be business architecture. To-be business model and goal/objective hierarchy represent the baseline upon which all to-be business architecture core and extended domains should be mapped and cross-mapped.

3.2 Develop to-be people practices & organizational culture. Defining the competencies, motivations, reward system, as well as organizational culture needed to achieve to-be business model via goal/objective hierarchy, is the next step.

3.3 Design to-be organization structure. Dividing the total labor into distinct tasks and defining the mechanisms necessary to achieve coordination among these tasks are two basic components of organization design.

3.4 Design to-be value chain & processes. Value chain explains how a company creates and exchanges value with its stakeholders. This step considers designing to-be value chains and their decomposition to the level of more or less detailed processes.

3.5 Visualize to-be IT architecture. This step considers defining technologies, data structures, and applications in a manner that will enable reaching an alignment of business and IT architecture, i.e., a state in which automated systems and data architectures fully enable strategy, capabilities, and stakeholder value.

3.6 Analyse current state/target state transformation. After the current and target states are well known, it is necessary to analyse the gap between them in order to understand its width and what it takes to bridge it.

4. Establish initiatives and deploy solution

4.1 Define initiatives based on the objectives. This is the area of the project portfolio management. In this step, the specific choices need to be made on how to achieve each of the objectives from the goal/objective hierarchy.

4.2 Prioritize initiatives. Each initiative is given a budget and other resources. Since resources are limited, the prioritization needs to be made based on the importance of the objective that should be achieved via designated initiative, its cost/benefit analysis, and the timeline.

4.3 Create initiative measurement criteria & KPIs. Monitoring the progress of each initiative requires defining criteria for measurement and accompanying KPIs. Each KPI needs to be well documented (what data will be used; how, when and who will collect the data; how will data be analysed; how will KPIs be calculated, etc.).

4.4 Establish project plan. Each initiative is translated into a concise project plan that precisely define the objectives, scope, people involved, timeline, risks, etc.

4.5 Monitor progress & deploy corrective measures. Continuous project monitoring will enable management to identify possible discrepancies between the project execution and the project plan in a timely manner, as well as to define and implement corrective measures.

4.6 Evaluate the level of success. Evaluating and communicating the performance of the digital transformation journey to all stakeholders will be done at the end of this complex endeavour. It is important for all stakeholders to understand that this is not the end of the digital journey, but rather the first stop on a long way ahead.

Creating a Finance Centre of Excellence

At its core, digital transformation is about harnessing the power of modern technologies to achieve key business objectives such as increasing profitability and strengthening the resilience of an organization in a competitive environment. For successful digital transformations, companies need to develop scalable internal RPA and IA expertise. This intelligence contributes to influencing technology strategies, adopting technologies, and achieving transformation goals.

One way to achieve this is to focus on RPA and IA expertise within an organization's core business units (CoEs), such as IT, IT Operations and IT Services. COEs are a great way to bring together the expertise of the IT team, IT department, Business Unit Management team and Business Intelligence team in one place.

A well-developed COE must involve team members who are disciplined and motivated, have a clear vision and actionable strategy, and use the best technology to enable the most effective deployment of RPA and IA in their business units. The focus of a CoE varies from technology and business concepts to special skills. Identify and assemble a team member with the right expertise to manage the project lifecycle from end to end.

A Finance Centre of Excellence (FCOE) can be a powerful tool to bring together a team of experts from different parts of the organization, such as finance, financial management and financial operations. Many organizations have successfully used shared service providers to create an F-COE and drive the transformation of financing processes. On the other hand, several organizations recognize the importance of creating a clearly defined structure for shared services and a clear vision for the future of their business.

Composition of Digital Accounting and Assurance Board 2020-21

Council Members

Chairman

CA. Manu Agrawal

Vice-Chairman

CA. Dayaniwas Sharma

CA. Atul Kumar Gupta, President (Ex-officio)

CA. Nihar Niranjana Jambusaria, Vice-President (Ex-officio)

CA. Anil Satyanarayan Bhandari

CA. Tarun Jamnadas Ghia

CA. Dheeraj Kumar Khandelwal

CA. Aniket Sunil Talati

CA. Ranjeet Kumar Agarwal

CA. Pramod Kumar Boob

CA. Prakash Sharma

CA. Hans Raj Chugh

CA. Charanjot Singh Nanda

CA. Chandrashekhar Vasant Chitale

Shri Manoj Pandey

Dr. P.C.Jain

Co-opted Members

CA. Sarad Chandra Beria

CA. Abhishek Kedia

CA. Sanjib Sanghi

CA. Arun Ahuja

CA. Neeraj Mittal

Special Invitees

CA. Tushar Mehta

CA. Arpinder Singh

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