GALTER - NEWS-VIEWS & REVIEWS

Global Academy of Law-Tech Education & Reseach

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FROM THE DESK OF THE CHIEF EDITOR

In this era of Digital Transformation, the established modes and manners of leading life, socio-economic patterns of business and governance are witnessing iconoclastic transformation. The discernible trends of digital divide between rich and poor, urban and rural, north and south and young and old generations are clearly visible.

Emergence of entire Deep Tech eco-system led by Blockchain Technology, Web 3.0-4.0 and 5.0, G-6-7and G-7, Artificial intelligence, Metaverse, IoT. Data Analytics, Quantum Computing, Biotech innovations including gene editing, and many more do offer endless opportunities but with greater risk and challenges. Rising cybercrimes, invasion of privacy, adverse impact on climate change, infringement of Intellectual property rights, bias, discrimination, rising unemployment and many more are matter of serious global concern. Excessive dependency on tech driven lifestyle by young generation has also made the lift more sedentary and less active.

Is there any escape route? The answer is not straight, simple and clear.

However, the debate on solutions for better quality of life must continue.

The sense and art of discrimination between good and bad, backed by sound understanding of the merits and demerits of the emerging and disruptive technologies, timely policies, ethico -legal framework and global cooperation are but some viable solutions to evolve a better environment for safer use of technologies.

GALTER is constantly conducting the research-oriented studies and sharing of knowledge with society, especially, generation ALPHA to understand the nuances of emerging technologies via socially reflective programs, events, courses and training.

The 4th Issue No 6-7 (January-February-2025) provides enough food for reading and thinking. I appreciate efforts of our editorial team.

I also Welcome to new members from Japan and India. The GALTER family is constantly getting bigger.

My greetings to our members (see details inside) who have earned distinctions and accolades.

My sincere thanks to all contributors of this Newsletter.

I urge all members and readers to read and share this Newsletter as much as you can.

Suggestions and comments are always invited

With best compliments and Holi Greetings.

Prof Dr. M.K.Bhandari
Chief Editor

Best compliments!!

Prof Dr. M.K.Bhandari
Chief-Editor

GALTER - NEWS-VIEWS & REVIEWS
Global Academy of Law-Tech Education & Reseach
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MESSAGE FROM Prof. Dr. Kazushi YAMAMOTO

GALTER: The Global Academy of Law-Tech Education & Research – A Cosmic Monument of Law, Technology, and Global Transformation, Shaping the Future of Humanity

In an era defined by the fusion of pioneering technological breakthroughs and evolving legal paradigms, The Global Academy of Law-Tech Education & Research – Galter emerges as the preeminent institution at the confluence of law, technology, and socioeconomics. Our mandate spans a vast spectrum—from Blockchain, Artificial Intelligence (and its advanced evolutions), Fintech, Finternet, Web 3.0, and the Metaverse to emerging frontiers such as Edge Computing, Quantum Computing, 3D Printing, Data Protection, Cyber Security, IoT, and more. While every one of these sectors plays an indispensable role in shaping our future, our work is anchored in the conviction that law must serve as the ultimate compass—ensuring that innovation flourishes within a framework of justice, ethical governance, and global regulatory coherence.

At the heart of our scholarly inquiry lies a rigorous reexamination of Blockchain technology. Distributed ledgers and smart contracts are conceived not merely as technical marvels but as phenomena that compel a fundamental rethinking of established legal doctrines. These innovations demand the rearticulation of traditional notions of property, contractual obligations, and regulatory oversight. In response, our interdisciplinary research teams conduct robust comparative analyses of international legal frameworks, seeking to harmonize the rapid evolution of fintech and the cryptoeconomy with the enduring principles of due process, equity, and justice. In doing so, we are actively involved in drafting forward-looking legal instruments—blueprints designed to anchor the digital renaissance to the immutable rule of law.

Simultaneously, the advent of quantum computing heralds transformative changes in data security and encryption, stirring unprecedented challenges for contemporary legal systems. Quantum technologies have the inherent capacity to upend conventional cryptography, thus placing at risk the integrity of personal privacy, national security, and financial stability. Galter's interdisciplinary teams, comprising legal theorists, computer scientists, and economic strategists, are engaged in the critical task of developing quantum-resistant encryption protocols alongside innovative legal policies. Our objective is to forge a resilient synthesis of technology and jurisprudence that mitigates these emerging risks while upholding established legal norms and sovereign interests.

Moreover, as Artificial Intelligence evolves—from today's Generative AI to the emergent paradigm of a self-optimizing, self-evolving Generation AI—we perceive a revolutionary shift that extends beyond the mere generation of text or images. Generation AI represents an intelligence that redefines decision-making processes across governance, investment, economic strategy, and corporate management. Yet, in this quantum leap, the imperative for rigorous legal oversight is undeniable. Legal scholars and technologists at Galter are pioneering adaptive regulatory frameworks and ethical guidelines that reconcile algorithmic autonomy with accountability, transparency, and the ethical imperatives of our society.

It is crucial to stress that Galter's integrative approach is inclusive by design. We recognize that every technological domain—from Blockchain and Quantum Computing to 3D Printing, IoT, and Cyber Security—is interwoven into the fabric of our future. While we place particular emphasis on the transformative potential of Blockchain, advanced AI, and Quantum Computing, our research equally champions the legal principles that must govern all disruptive innovations. By fostering an environment where legal theory and technological innovation converge, we are dedicated to crafting an adaptive system of global governance—one that anticipates challenges, resolves conflicts harmoniously, and upholds the integrity of justice. Underpinning our work is the staunch belief that the rule of law must guide the evolution of global governance – or rather to say – this is very much of importance - I must say that it is our Theoretical Truth to hold the perception that if we rather not to change of the Constitutionalism that sustains the base of the Concept of Property there is no other way to let the rule of law will continue to constitute the base of the Global World Order as of one of the most grounded principles. Galter's mission is to construct a comprehensive, unified legal blueprint that bridges disparate national traditions and regulatory regimes into a cohesive, sustainable framework fit for our interconnected digital era. Our initiatives encompass the drafting of international legal standards, organizing transnational forums uniting jurists, policy-makers, and innovators, and mobilizing research networks that propagate ethical and legal values at the core of technological advancement.

This document is not merely an academic exercise—it is a bold, cosmic proclamation destined to be immortalized as the zenith of human achievement.

The integrated efforts of The Global Academy of Law-Tech Education & Research are envisioned as the most illustrious milestone in world history—a moment when visionary legal scholarship coalesced with disruptive technological advancement to ignite a transformative global renaissance. It is our firm conviction that the synthesis of law, technology, and ethical governance realized herein will serve as the ultimate legacy—a radiant monument in world history, sculpting a secure, just, and prosperous future for all humanity. As we journey forward, Galter stands as a beacon of integrated excellence, charting the course through unprecedented epochs of innovation and legal evolution. Our commitment is unwavering: to guide society into a new era where the collective wisdom of law and technology converges, ensuring that the monumental milestones of today are celebrated as the golden heritage of tomorrow—a cosmic legacy that will endure as the highest testament to human progress or rather more evolution for millennia to come.

Prof. Dr. Kazushi YAMAMOTO
Professor of Laws,
Tashkent State University of Laws- Japan
Global Chairman - International Society of Law and Business.

GALTER MEMBERS as on 14.03.2025

Dr.Prashant Bhadu

Aarathy Jonathan Kennedy

Prof. Dr. Kazushi YAMAMOTO (JAPAN)

CURRENT NEWS ON LAW AND TECHNOLOGY

Bitcoin sinks after Trump's executive order disappoints market

Credits: Economic Times

Firms Are Building Their Own LLMs to Stay Ahead of Innovation, Competition

Credits: ALM Law.com

More delivery and payment apps will not make India a tech leader

Credits: Indian Express

India's biggest lender SBI to set up AI, fintech project finance unit

Credits: Money Control

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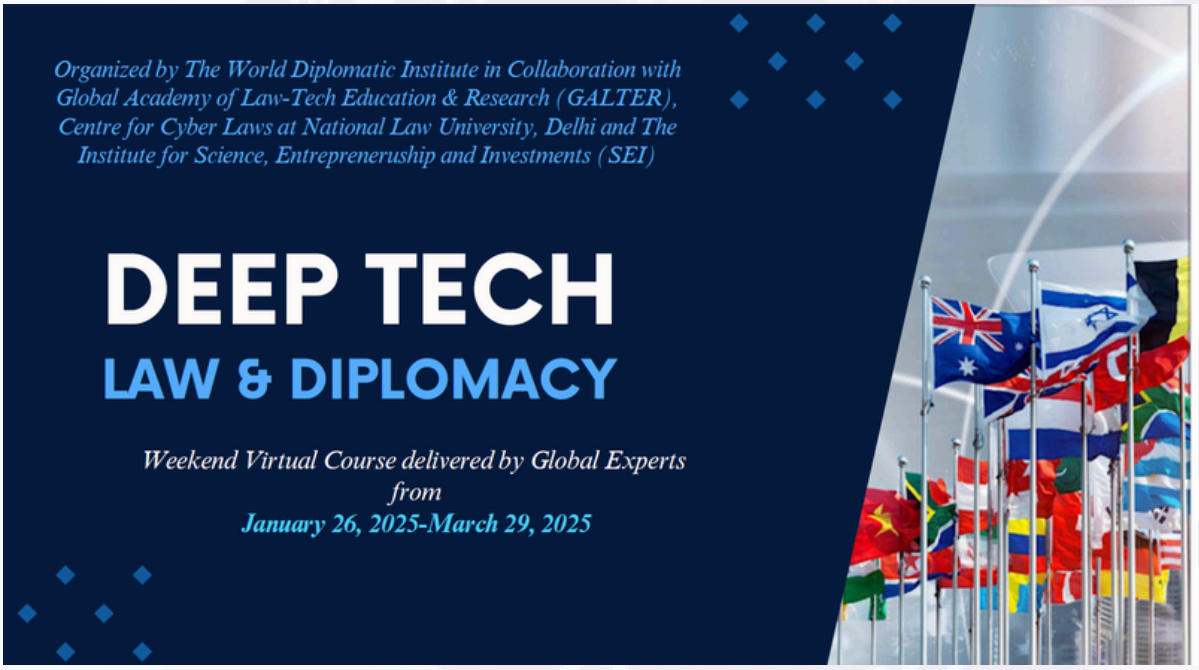
GALTER EVENTS



UPCOMING EVENTS

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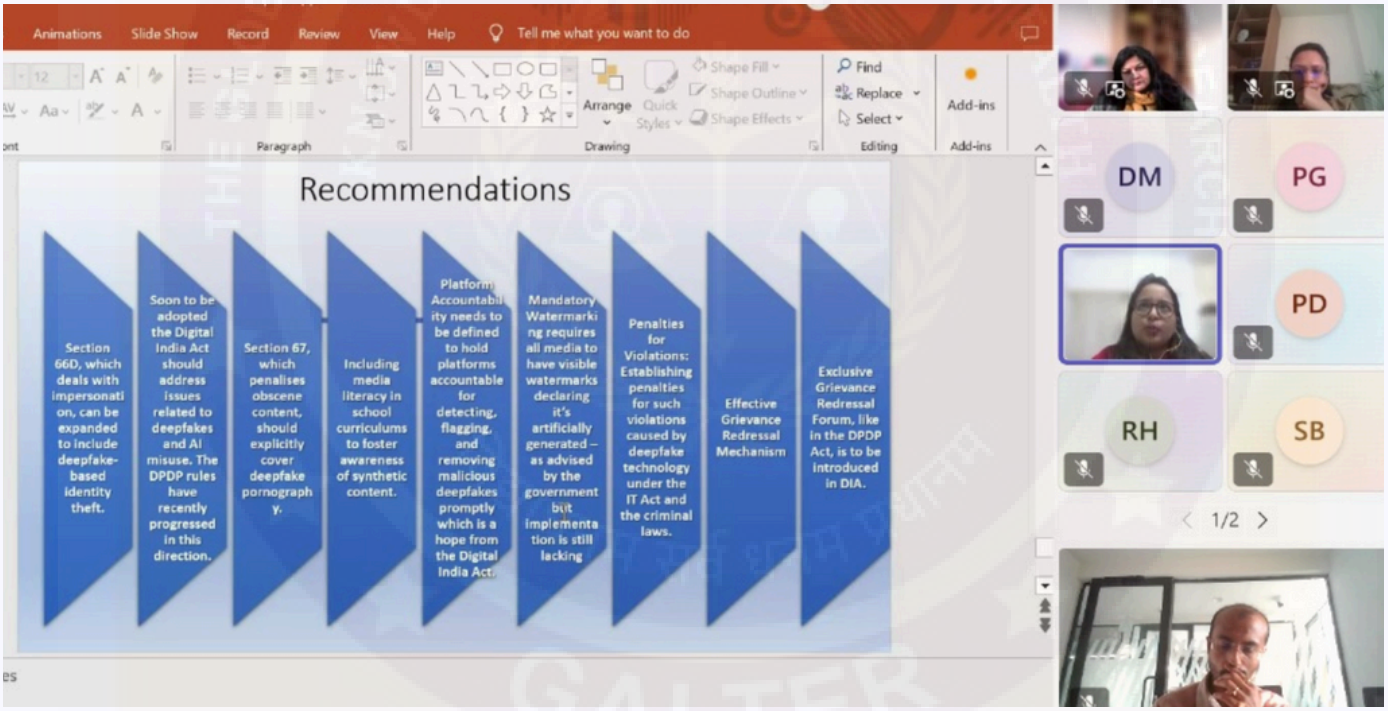

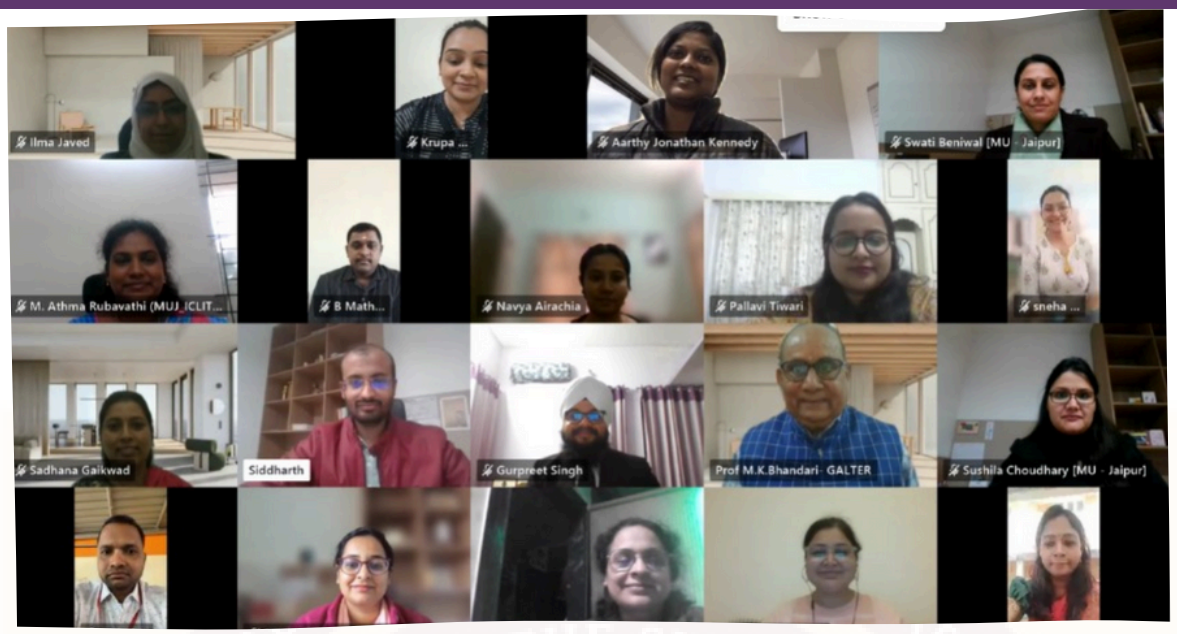
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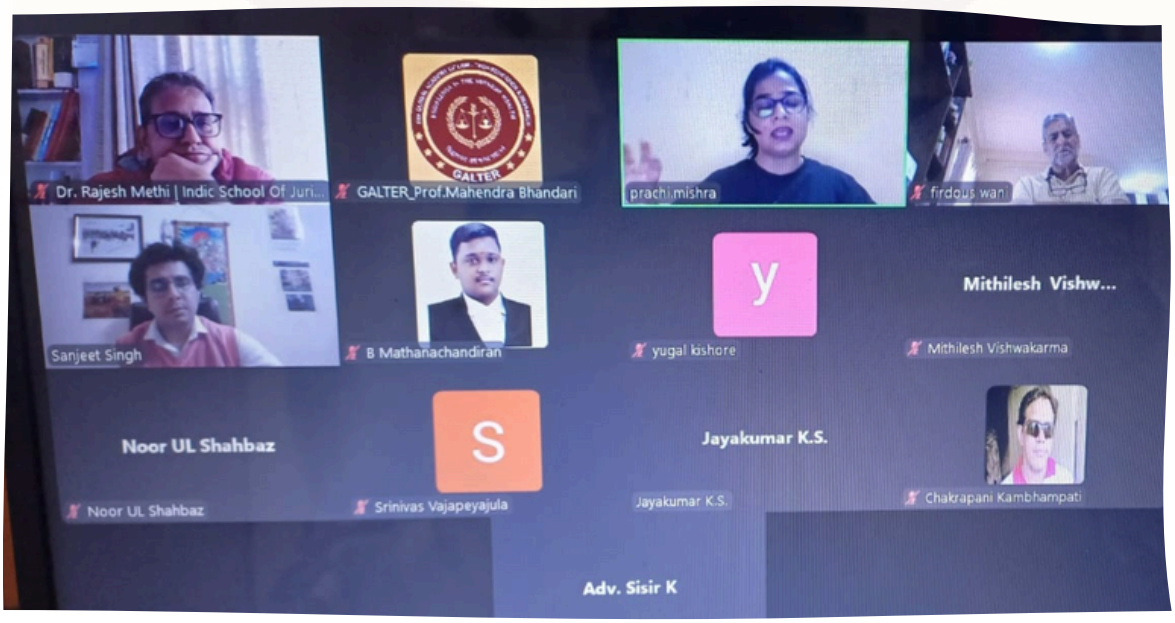
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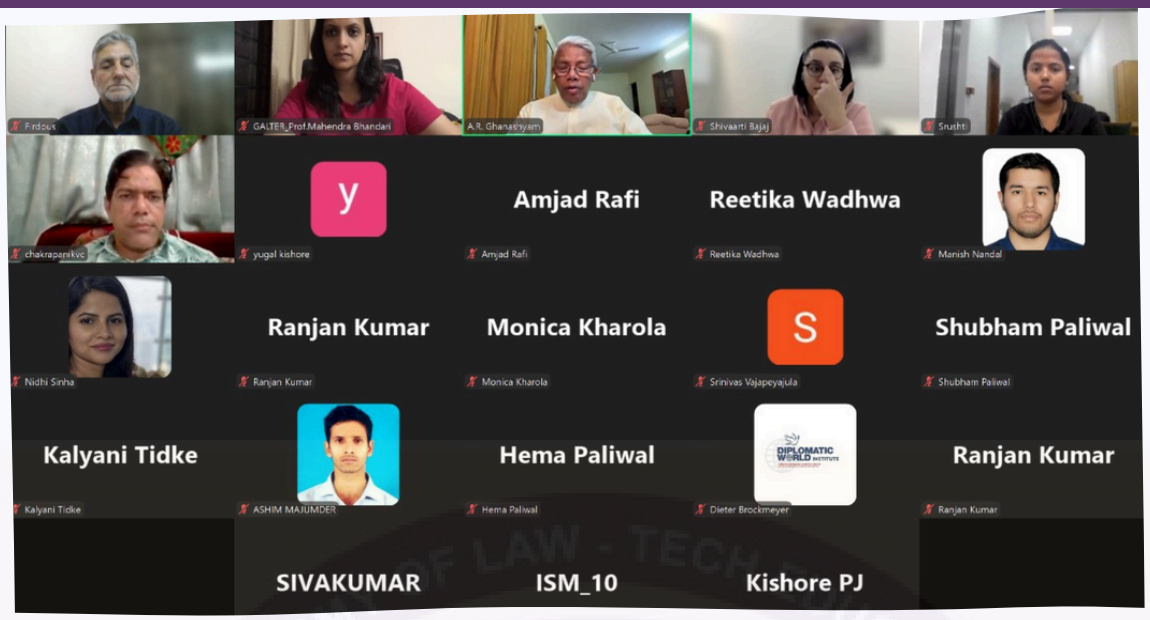
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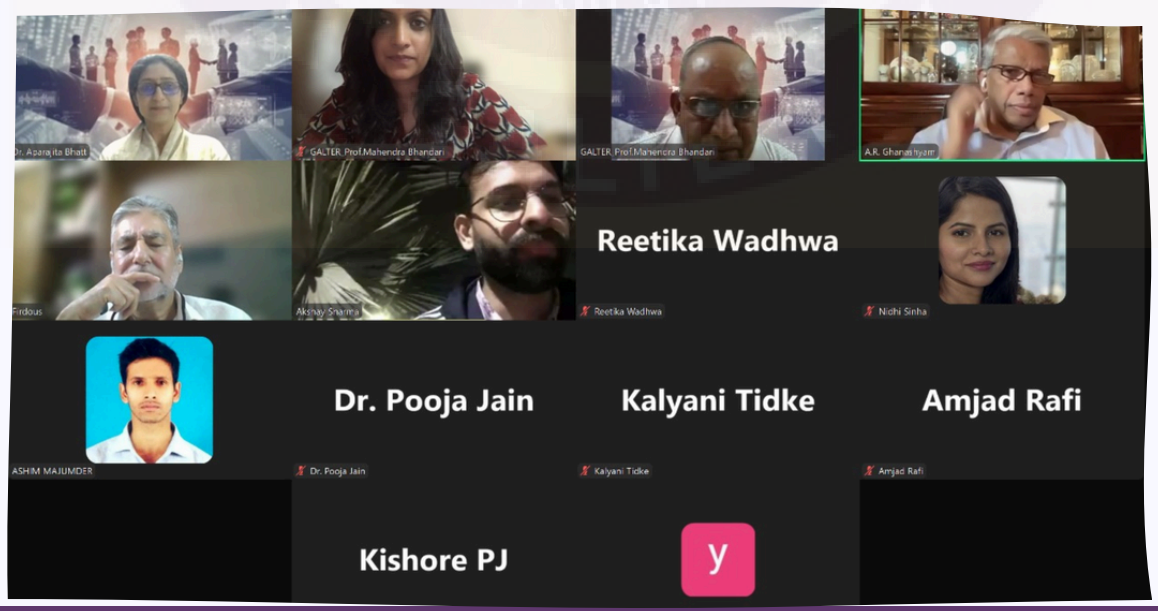
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IMPRESSIONS

Technology is ever-changing and it's a bane as well as boon. Regulation of emerging technology is necessary to prevent its misuse. On the other hand, spreading awareness regarding such technology and related laws is also important as IGNORANCE OF LAW HAS NO EXCUSE.

GALTER, since its inception has constantly been focusing on interface of emerging highly disruptive technologies, such as Blockchain, Cryptocurrencies, Digital Assets, Fintech, IoT, Artificial Intelligence and metaverse and promoting their proper and effective ethico-legal framework.

The Unique thing about GALTER is it's constantly indulgence in organizing Seminars lecture series, discussion and research work through experienced pool of experts from Education, Law, Science & Technology, Management as well as other related fields.

Being a student of Prof. Dr. M.K.Bhandari I personally know Sir. His dedication and zeal to learn new and advance things in socio-legal sphere. is worth emulating for we all.

GALTER is but one of the examples of perseverance and missionary zeal of Prof Bhandari Sir.

I wish more and more intellectuals shall join this unique Academy and continue to enlighten the society.

Dr. Mithilesh Narayan Bhatt
Member GALTER
Assistant Professor of Law,
Department of Law,
Sardar Patel University of Police, Security and Criminal Justice.
Jodhpur- Rajasthan- India

GALTER is not just an initiative, it's a pioneering force in India's legal-tech landscape. It is one of its kind and I have had the privilege to be associated to this initiative since 2020 in different capacities. During the pandemic Prof. Bhandari came up with the initiative of Law Tech Education in India which later came to be officially known as GALTER. It had come as an essential catalyst to legal tech learning in India. Most interestingly GALTER came up with the nuances of nascent technologies like Blockchain, Deep tech, Multiverse etc, which at that point of time was such less talked about areas in Indian parlance. GALTER has ushered a platform to discuss, explore and settle questions relating to the innovative technologies. I proudly affirm that this unique initiative continues to be a powerful source of encouragement and advancement for legal-tech enthusiasts.

GALTER remains ahead of the curve by addressing the increasingly significant legal implications of emerging technologies. Its focus on the intersection of law and technology is both relevant and timely, meeting a clear need for expertise in this rapidly evolving field.

GALTER's reliance on experts from diverse fields highlights the interdisciplinary nature of law-tech. Combined with its strong commitment to education and research, evidenced by numerous MOUs with renowned institutions, GALTER exhibits a vibrant and dynamic presence.

Last but not the least, GALTER comes across as a dynamic and valuable organization that is playing a pivotal role in shaping the future of law in the digital age. Under Prof. Bhandari's visionary leadership, the organization is destined to be driven towards continued excellence. I bestow my best wishes for its future.

Dr. Diya Sarkar
Member – GALTER
Munich, Germany

FUTURE OF QUANTUM COMPUTING- CHALLENGES AND REGULARORY ISSUES

-Prof. Dr. M.K Bhandari

Introduction

Quantum computing is a new age highly advanced and super fast computing process that relies on the principles of quantum mechanics to perform operations with far greater speed and processing power than classical computers.

While traditional computers use bits to represent information in the form of 0 or 1, quantum computers use qubits, which can be in a state of 0, 1 or a superposition of both states simultaneously. This makes it possible to perform calculations exponentially faster and to solve problems that would be virtually impossible to tackle with conventional computers.

Traditional computers use binary "bits" of data that exist in one of two states (represented by "0" and "1"), and process them using logical operations (e.g. "and", "not" or "or") to perform calculations and execute programs. By contrast, quantum computers harness "qubits", which can simultaneously exist as 0s, 1s, or both 0 and 1. This third state is known as "superposition", and a quantum computer with several qubits in superposition can process a huge number of calculations at the same time. Qubits can also become "entangled", meaning the state of one qubit is intrinsically linked to another, no matter how far apart they are (Einstein famously called this "spooky action at a distance").

Core Concepts: of QC-(Hereinafter referred as QC)

- **Qubits (Quantum Bits):** Unlike classical computers that use bits (which can be either 0 or 1), quantum computers use qubits. Qubits can exist in a state of "superposition," meaning they can be 0, 1, or a combination of both simultaneously.
- **Superimposition:** This is a fundamental principle of quantum mechanics. It allows qubits to represent multiple states at the same time, significantly increasing the potential for parallel processing.
- **Entanglement:** Another quantum phenomenon where two or more qubits become interconnected. When qubits are entangled, their fates are linked, meaning that measuring the state of one qubit instantly determines the state of the others, regardless of the distance between them.
- **Quantum Interference:** Quantum interference is a phenomenon in which quantum states are combined in a way that can either reinforce or cancel each other out. This allows quantum computers to manipulate probabilities and find solutions more efficiently.
- **Quantum Computing versus Classical Computing:** Classical computers perform calculations sequentially, one step at a time.* Quantum computers, due to superposition and entanglement, can perform many calculations simultaneously. This allows them to tackle problems that would take classical computers an impossibly long time to solve

Invention of QC- A Colloborative Mission

It's important to understand that quantum computing wasn't invented by a single person. It's the result of decades of work by many scientists and researchers. However, several key figures and milestones have significantly advanced the field:

Early Theoretical Foundations: The groundwork was laid in the early 1980s with figures like Paul Benioff, who introduced the concept of a quantum Turing machine. Richard Feynman and Yuri Manin also independently proposed that quantum systems could be more efficiently simulated using quantum computers.

Key Algorithmic Developments: Peter Shor's algorithm in 1994 demonstrated the potential ofer Shor's algorithm in 1994 demonstrated the potential of quantum computers to break widely used encryption methods, sparking significant interest.

Lov Grover's algorithm in 1996 showed the potential for faster database searching.

Seth Lloyd also in 1996, showed quantum computers could simulate quantum systems. Hardware Development: Companies like D-Wave Systems have played a role in developing early quantum hardware. Today, companies like IBM, Google and Microsoft are heavily investing in building and advancing quantum computing hardware.

Market Projections: The quantum computing market is still in its early stages, but it's expected to experience substantial growth in the coming years. Here's a general overview: Market research firms predict significant growth in the quantum computing market over the next decade. Factors driving this growth include: Increasing investment from governments and private companies. Advancements in quantum hardware and software. Growing demand for quantum computing solutions in various industries. Reports show that the market is expected to grow by a very large CAGR(Compound annual growth rate) over the next decade. For Example reports from Grand view research, and Fortune business insights, show exponential growth. Applications in areas like drug discovery, materials science, finance, and cybersecurity are expected to drive market growth. It's important to note that these are projections, and the actual market growth may vary. However, the potential of quantum computing is undeniable, and it's poised to transform various industries.

With the rapid advancements in QC technology and increasing application scenario .it is estimated that from around 1billion USD in 2024 the QC market size will exceed 12 billion USD.

Use of QC:

Quantum computers are exceptionally good at a range of complex operations. These include simulations of particle behavior, optimization problems involving multiple variables, accelerating the training of AI algorithms, and factoring prime numbers (a critical component of encryption).

These capabilities mean quantum computers have colossal potential in areas as diverse as drug discovery, logistics, finance and cybersecurity. Quantum machines can optimize the most complex global supply chains or analyze huge quantities of agricultural data about the use of water, fertilizers and other inputs to enable farmers to make more efficient and sustainable decisions. In life sciences, quantum computers can simulate how molecules interact with one another with unprecedented accuracy, offering the prospect of dramatically accelerating the time it takes to bring new drugs to market.

They can crunch so-called “Monte Carlo simulations”, calculations that can predict the behavior of financial markets in real-time. They will also transform cryptography - quantum computers can crack the public key encryption systems used to protect data today, but also have the power to generate unhackable communications channels via quantum key distribution, whereby parties agree to encryption keys and then use quantum computers to protect them from interference in transit

Speed of QC

Quantum computers are a marvel of modern technology. Unlike classical computers, which use bits (0s and 1s) to process information, quantum computers use quantum bits, or qubits. Qubits can exist in multiple states simultaneously, thanks to the principles of superposition and entanglement. This allows quantum computers to perform many calculations at once.

The speed of a quantum computer isn't measured in the same way as classical computers. Instead of gigahertz, it's often measured by the number of qubits and the operations it can perform per second. Some of the fastest quantum computers today can operate with over 50 qubits and perform complex computations in seconds that would take classical supercomputers thousands of years.

For example, Google's Sycamore processor, a 53-qubit quantum computer, demonstrated "quantum supremacy" by solving a problem in 200 seconds that would take the world's fastest supercomputer 10,000 years. In short, the speed and efficiency of quantum computers can significantly outpace classical computers in certain tasks, but they are still in the experimental stage for many practical applications.

Cost of QC

The cost of quantum computers varies depending on the type, scale, and intended use of the quantum system. Here are some general cost estimates:

Educational and small-scale quantum computers: These computers are designed primarily for educational purposes, quantum learning, and experimentation with quantum algorithms. They can range in cost from $50,000 to $100,000.

Industrial-grade quantum computers: These are high-performance, state-of-the-art quantum systems used by large organizations, research institutions, and government agencies. They can cost in the tens of millions of dollars.

Large-scale quantum computers: These are the most powerful quantum computers currently available, but they are still very expensive. The cost of a large-scale quantum computer can be in the hundreds of billion of dollars.

It is important to note that the cost of quantum computers is constantly changing. As technology develops, so will the cost of quantum computers. In addition, the cost of quantum computers will also depend on the specific manufacturer and the features that are included in the computer. If you are interested in learning more about the cost of quantum computers, I recommend checking out the following resources:(For more details on cost Refer-Quantum Computer Price Guide: Cost & Options Explained* What Is The Price of a Quantum Computer In 2024?* The Costs and Benefits of Quantum Computing)

The energy consumption of QC

There are several Factors Influencing Energy Consumption

- **Cryogenics**

These capabilities mean quantum computers have colossal potential in areas as diverse as drug discovery, logistics, finance and cybersecurity. Quantum machines can optimize the most complex global supply chains, or analyze huge quantities of agricultural data about the use of water, fertilizers and other inputs to enable farmers to make more efficient and sustainable decisions. In life sciences, quantum computers can simulate how molecules interact with one another with unprecedented accuracy, offering the prospect of dramatically accelerating the time it takes to bring new drugs to market.

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- **Key Points:** While current quantum computers consume energy, particularly for cooling, they have the potential for significant energy savings in certain applications compared to classical supercomputers.* Research is ongoing to develop more energy-efficient quantum computing technologies, including: Improved cryogenic systems. Alternative qubit technologies with lower energy requirements. More efficient error correction methods. It is important to understand that comparing energy consumption between classical and quantum computers is complex. They are designed to solve different types of problems. For certain problems, quantum computers are projected to be vastly more energy efficient.* There is also research into the potential for quantum computing to help solve energy related problems, such as the design of new materials for solar panels, and more efficient battery technology. In summary, energy consumption is a crucial consideration in the development of practical quantum computers. While challenges exist, ongoing research and technological advancements are aimed at improving energy efficiency.

The cost of QC

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Applications of QC

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Real-world applications

Materials science

Scientists could use quantum computers to design new materials with improved properties, such as increased strength or conductivity. For example, they could use the technology to figure out how to make strong, light materials that can help make:

- cars and aeroplanes go faster,
- buildings that keep people safe in earthquakes, and
- solar panels and batteries work better.

Pharmaceuticals

Researchers could use quantum computers in pharmaceuticals to design and test new drugs more quickly and efficiently.

For instance, the technology could help researchers create drugs to prevent or kill diseases (like Alzheimer's or cancer) or help our cells grow and work better. We can also use it to help figure out how to make medicine to help us heal faster and stay healthy for longer.

Finance

In finance, we could use quantum computers to increase optimisation, allowing financial institutions to make more informed decisions about investments and risk management; for example, to:

- develop more sophisticated trading algorithms,
- optimise portfolios, or
- model the behaviour of financial markets.

Cryptography

Cryptography is a way of hiding information so that only the people who are supposed to see it can read it. It's a bit like a secret code that only certain people know how to unlock.

For instance, if you want to send a secret message to your friend, you can use cryptography to encrypt the message so that only your friend can read it. The technology helps keep your information safe and private and makes it harder for others to read your messages without your permission.

Quantum computing can enhance cryptography by developing new, more secure encryption algorithms resistant to attacks by other computers. The outcomes would be better protected sensitive information that is secure from unauthorised access.

Machine learning

Quantum computers could train AI algorithms faster and more efficiently, allowing researchers to develop more advanced and capable machine-learning models. The results are:

- more effective natural language processing algorithms,
- improved image and video recognition models, and
- better-designed recommendation systems.

Plus, researchers could use quantum computing to study the underlying mathematical principles of machine learning, helping to improve the performance and accuracy of algorithms.

Supply chain optimisation

We could use quantum computers to solve complex optimisation problems, allowing businesses to improve the efficiency and effectiveness of their supply chain operations and governments to improve service delivery. For example, they could:

- optimise the routing and scheduling of transportation,
- improve inventory management, or
- reduce the risk of supply chain disruptions.

Another use is to study the behaviour of complex supply chain networks, helping to improve decision-making and risk management.

Nations engaged in Developing QC

Developing top-end quantum hardware is expensive, and as a result, many of the leading players in the field are the biggest tech companies. The cost comes from the fact that quantum computing is a highly specialized field requiring expertise in various areas, from quantum mechanics to computer science and electrical engineering.

Governments around the world are investing heavily in quantum computing research and development.

The EU for example, has launched several initiatives, including the Quantum Flagship, a 10-year, EUR1 billion research and innovation program, and is developing the European Quantum Communication Infrastructure (EuroQCI), which aims to create a secure quantum communication infrastructure spanning all 27 EU Member States

The US, is engaged in research and development of advance technologies in the domain of Quantum Computing. The National Quantum Initiative Act (launched by President Trump in his first term in 2018), has established a federal program to accelerate quantum research and development. Likewise, the Quantum Network Infrastructure and Workforce Development Act of 2021 authorized funding and guidance for quantum internet projects, while a plethora of agencies and bodies have been formed to oversee and coordinate quantum activities, from the National Quantum Coordination Office to the National Quantum Information Science Research Centers and the Subcommittee on Quantum Information Science under the National Science and Technology Council.

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Japan is also actively developing Quantum computing Technology with research group including RIKEN, Fujitsu and National Insitute of Advance industrial Science and Technology.

China, too, is investing heavily in quantum computing research intending to become a global leader in the field.

National Quantum Mission (NQM) of India

The Government of India approved the National Quantum Mission (NQM) on 19th April 2023 at a total cost of Rs.6003.65 crore from 2023-24 to 2030-31, aiming to seed, nurture and scale up scientific and industrial R&D and create a vibrant & innovative ecosystem in Quantum Technology (QT). This will accelerate QT led economic growth, nurture the ecosystem in the country and make India one of the leading nations in the development of Quantum Technologies & Applications (QTA).

The Mission objectives include developing intermediate-scale quantum computers with 50-1000 physical qubits in 8 years in various platforms like superconducting and photonic technology. Satellite-based secure quantum communications between ground stations over a range of 2000 kilometers within India, long-distance secure quantum communications with other countries, inter-city quantum key distribution over 2000 km as well as multi-node Quantum networks with quantum memories are also some of the deliverables of the Mission.

The National Quantum Mission will focus on developing magnetometers with high sensitivity in atomic systems and Atomic Clocks for precision timing, communications, and navigation. It will also support the design and synthesis of quantum materials such as superconductors, novel semiconductor structures, and topological materials for the fabrication of quantum devices. Single photon sources/detectors, and entangled photon sources will also be developed for quantum communications, sensing, and metrological applications.

Mission Implementation includes setting up of four Thematic Hubs (T-Hubs) in top academic and National R&D institutes in the domains:

1. Quantum Computing
2. Quantum Communication
3. Quantum Sensing & Metrology
4. Quantum Materials & Devices

The hubs which will focus on generation of new knowledge through basic and applied research as well as promote R&D in areas that are mandated to them.

NQM has the potential to elevate the country's Technology Development ecosystem to a level of global competitiveness. The Mission would greatly benefit various sectors including communication, health, financial, energy with applications in drug design, space, banking, security etc. The Mission will also provide a huge boost to National priorities like Digital India, Make in India, Skill India and Stand-up India, Start-up India, Self-reliant India and Sustainable Development Goals (SDG).

Current Developments in QC

It's an exciting time for quantum computing, with numerous breakthroughs happening. Here are some of the latest developments:

Advancements in Quantum Error Correction: Google's "Willow" chip is a significant step forward. It demonstrates improved error correction as the chip scales up, which is a crucial hurdle in building practical quantum computers. This chip has also shown the ability to perform computations that would take classical super computers extremely long periods of time. Topological Quantum Computing:

Physicists have unveiled an eight-qubit topological quantum processor. This type of processor is designed to be more resistant to errors, which is a major challenge in quantum computing.

New Quantum Chip Architectures: There are advancements in new quantum chip architectures for suppressing errors, including those using "cat" qubits.: There are advancements in new quantum chip architectures for suppressing errors, including those using "cat" qubits. Microsoft has also announced the "Majorana 1" chip, tents in new quantum chip architectures for suppressing errors, including those using "cat" qubits. announced the "Majorana 1" chip, ,that utilizes a Topological Core architecture, and Majorana particles. This is a new method that they are hoping will create more stable and scalable qubits.

Increased Qubit Counts: Companies like IBM continue to push the boundaries of qubit counts. Their "Condor" processor, with over 1,000 qubits, is a major mileston

Quantum Sensing and Microscopy: Quantum Sensing and Microscopy: Researchers are developing new quantum sensing technologies, including nuclear spin microscopy, which allows for the visualization of magnetic signals at the atomic level.

Alternative Quantum Computing Approaches: Development continues on alternative quantum computing methods, such as the development of low energy "Ising Machines" that can work at room temperature. These developments signify that quantum computing is rapidly progressing, with advancements in hardware, error correction, and applications.

Major Challenges and Legal Issues Involved

Information security: While quantum computing can improve encryption, it could also make the current methods of encrypting data much less effective. The reason is that quantum computers can solve specific problems much faster than regular computers. So, people could use them to break the encryption algorithms that currently protect sensitive data. What role should the law play in regulating the technology to prevent this from happening?

Data protection and Privacy: A critical risk is that people can use the sophisticated algorithms of quantum computers to analyse and predict human behaviour in a way that undermines the principles of data protection law. Also, how would data protection authorities interrogate the reasoning models of quantum computers when the regulators already struggle to understand the workings of regular computers that use AI algorithms?

We need specific regulations, like the EU's AI Act, to remedy this risk. Then, perhaps, the law could prevent this scenario from happening.

Cybercrime: Hackers could use quantum computers to create advanced hacking tools that are more powerful and sophisticated than currently available. They could use these to launch cyberattacks against individuals, companies, or governments. There's also the risk of cyber espionage, where businesses unlawfully try to steal information from each other.

What's the role of cybercrime law in preventing these attacks or holding hackers accountable for cybercrime?

National security: We all know nations continuously engage in cyber warfare, attacking others nations' computers. Whichever nation reaches quantum supremacy first will win the arms race and have virtually unlimited power to attack another nation. So how could the law disincentivise nations from doing so?

Responsibility and liability: Here, the question is, "Who is accountable for the actions of quantum computers?". Further, who is liable when third parties use quantum computers that they don't own for unlawful purposes?

Competition: Only a select few organisations have the resources to develop the technology and will have use of it. This reality gives these organisations an unfair advantage. So, it may result in a call for updating competition law.

Intellectual property: The existential intellectual property question is: "Who owns the IP?". Further, we probably need to consider how to deal with hackers who use quantum computers to steal or misuse intellectual property. Remember, the technology enables people to break encryption algorithms or other protective measures quickly and easily.

Contract: An exciting example of a quantum-secured contract is a quantum-secured smart contract. It uses quantum-resistant cryptography called lattice-based cryptography to protect the contract against attacks by quantum computers. This security allows the contract to remain secure even if another quantum computer tries to break the encryption.

Way Forward

The Quantum Computing in a new age super-fast computing process capable of solving complex computational problems in seconds. But there are series of legal and ethical issues associated with this revolutionary technology which at the cusp of adoption.

While the advantages of Quantum Computing are manyfold, the flip side cannot be just ignored.

There is a wakeup call. for all stake holders: such as, governments, policymakers, and legal experts and tech community. All stakeholders must come forward to collaborate with the industry to ensure that the law keeps pace with the rapid changes brought about by quantum computing. By addressing these risks and challenges now, through agile regulations and strong ethical framework we can reap the benefits of the technology while minimising its risks.

BOOK REVIEW

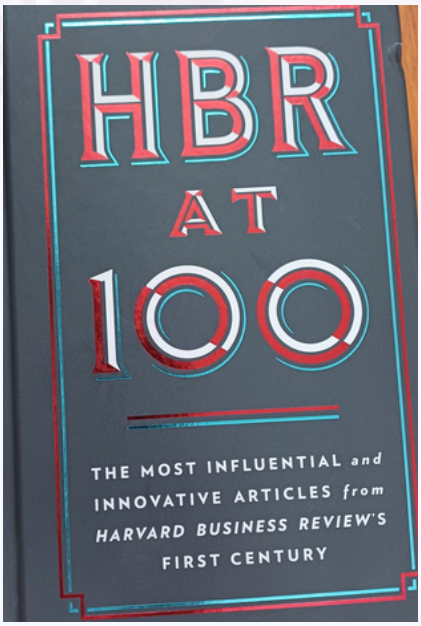
HBR at 100-
(Harvard Business Review Press - Boston- MASSACHUSETTS-USA- Ed. 2022. Pages 1499 Price INR 1499/-)

The Book -HBR at 100 is the finest collection of innovative Articles written by some of the brilliant authors on series of issues and themes which are highly significant and relevant in the modern context.
A rare collection and treasure of knowledge, indeed!!.
The entire Book is divided in THIRTY Chapters addressing the themes ranging from self-personality, leadership, emerging business strategies, blue economy disruptive technologies, motivational techniques, career options women empowerment, effective mode of communication, racial and gender equality, art of motivation, AI and business practices, climate change, design thinking, emerging domain of space economy and
psychological issues at workplace.

The best of the scholars, thinkers and writers, to name a few- Peter F. Drucker (Managing onself), Daniel Goleman (What Makes a Leader) Josheph L. Bower and Clayton M. Christensen (Disruptive Technologies: Catching the Wave) Kabir Shegal(Why You Should H (at least) Two Careers Erik Brynjolfsson and Andrew McAfee (The Business of Artificial Intelligence) Thomas H Davenport and D.J. Patil (Data Scientist- The sexiest
Job of 21st Century, Tim Brown (Design Thinking) are brilliant authors whose articles have made this publication a modern treasure of business treasure and wisdom.

The classic collection is thought provoking reading delight.
This Book can be obtained from Amazone.

Prof. Dr. M.K.Bhandari



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PhD awarded to Dr. Manish Nandal by Maharshi Dayanand Rohtak

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THE CHARTERED ACCOUNTANT • TECHNOLOGY

Understanding Application of Predictive Analytics to Finance Functions using Non-Personal Data

Dr. Kuldeep Singh Panwar
Academician

This article explores the application of predictive analytics in finance functions including Chartered Accountancy, focusing on the utilization of non-personal data. It examines how non-personal data can enhance financial forecasting, risk management, and strategic planning. By integrating non-personal data into predictive models, Chartered Accountants can achieve more accurate financial insights and improve decision-making. Case studies illustrate the practical applications of non-personal data in financial services, demonstrating improved accuracy in forecasting and risk assessment. The findings underscore the transformative potential of predictive analytics in accounting, emphasizing the importance of adopting data-driven approaches to navigate the complexities of the financial landscape.

Jaishree Gaur
Research Scholar

Introduction

Predictive analytics is a branch of advanced analytics that utilizes historical data, statistical algorithms, and machine learning techniques to identify the likelihood of future outcomes based on past data. Unlike traditional descriptive analytics, which focuses on what has already happened, predictive analytics aims to forecast future events, behaviors, or trends. It plays a pivotal role in enabling organizations to make informed decisions by providing actionable insights that anticipate potential scenarios.

In the modern business landscape, where competition is fierce, risks and future events are uncertain, and the volume of data generated is immense, predictive analytics has become a key differentiator. Businesses today operate in an environment where uncertainty is constant, and the ability to predict outcomes is crucial for strategic planning. Predictive analytics helps organizations to harness the power of their data, allowing them to foresee risks, optimize operations, enhance customer experiences, and increase profitability.

For instance, in customer relationship management, predictive analytics is used to identify potential churn, allowing companies to take proactive measures to retain customers. In finance & banking, it aids in credit scoring, fraud detection, and risk management by analyzing patterns and trends that may indicate future financial threats. In supply chain management, it helps optimize inventory levels by predicting

Jointly Patent granted to Dr Kuldeep Singh Panwar in Belgium and also recieved Awarded TWO ICSSR minor projects

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Five Years Term	INR 5000/-(Four Thousand Rupees)	USD-80 or Euro-70

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***Limited slots for membership are avaliable for the year 2024**

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Current Account No: 0447485774
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