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THAKUR COLLEGE OF ENGINEERING & TECHNOLOGY

Simplus 2022

Edition: 10.2

FINTECH

The Heart of morden era finance

Computer Engineering Department

Vision

"To become the department of national relevance in the field of Computer Engineering"

Mission

To nurture students with sound engineering knowledge in the field of computing through effective use of modern tools with a focus on global employability by imbibing leadership qualities, ethical attitude, lifelong learning and social sensitivity.

Programme Educational Objectives (PEOs)

Students of BE Programme in Computer Engineering will be able to:

PEO 1: Atain Sound Engineering knowledge and use of modern tools effectively to solve real life problems (KNOWLEDGE)

PEO 2: Atain need based skills and life long learning to ensure global employability (SKILL)

PEO 3: Become successful professionals and responsible citizens with good leadership qualities and strong ethical values (PROFESSIONALISM)

Programme Outcomes (POs)

PO 1: ENGINEERING KNOWLEDGE: Apply Knowledge of Mathematics, Science, engineering fundamentals and an engineering specializationto the solution of complex.

PO 2: PROBLEM ANALYSIS: Identiy, Formulate, Research Literature and Analyze Complex engineering problems reaching substantited conclusions using rst principles of mathemamatics, natural sciences and engineering sciences.

PO 3: DESIGN/ DEVELOPMENT OF SOLUTIONS: Design solutions for complex engineering problems and design system components or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal and environmental considerations.

PO 4: CONDUCT INVESTIGATIONS OF COMPLEX PROBLEMS: Using research based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of information to provide valid conclusions.

PO 5: MODERN TOOL USAGE: Create, select and apply appropriate techniques, resources and modern engineering and IT tools including prediction and modelling to complex engineering.

PO 6: THE ENGINEER AND SOCIETY: Apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural

PO 7: ENVIRONMENT AND SUSTAINABILITY: Understand the impact of professional engineering solutions in societal and environmental contexts and demonstrate knowledge of and need for sustainable development.

PO 8: ETHICS: Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practices.

PO 9: INDIVIDUAL AND TEAM WORK: Function effectively as an individual, and as a member of leader in diverse teams and in multi-disciplinary settings.

PO 10: COMMUNICATION: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations and give and receive clear instructions.

PO 11: LIFE-LONG LEARNING: Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PO 12: PROJECT MANAGEMENT & FINANCE: Demonstrate knowledge and understanding of engineering and management and leaders in a team to manage projects and in multi-disciplinary environments.

Programme Specific Outcomes (PSOs)

PSO 1: Develop academic aptitude and apply knowledge of computing and mathematics to computer science problems and thereby design and develop Software and Hardware Systems.

PSO 2: Enhance research skills and utilize advanced computing tools for analysis, design and implementation of computing systems for resolving real life / social problems.

PSO 3: Utilize multi-disciplinary knowledge required for satisfying industry / global requirements and hence develop an attitude for life long learning.

PSO 4: Have all round personality with skills like leadership, verbal and written communication, team work, sensitivity towards society in order to become valued and responsible professionals.

TEAM 2022

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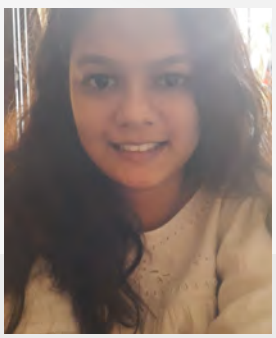

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MESSAGES
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Message from the HOD

Education is the ability to inculcate discipline, build trust and enhance the growth of individuals at various levels. With hard work and punctiliousness laced with knowledge and interaction, one can achieve the great success that one desires. The vision of our magazine is to impart quality education in all core disciplines of knowledge by focusing on the empowerment of our students with overall development.

Nimbus- our departmental magazine is the combined effort of students, faculties, and the magazine team. Through Nimbus, we provide everyone the wonderful platform to present their ideas in the form of articles. We are encouraged to see the enthusiastic participation of students and faculties.

In this edition, we bring to you our new theme "Fintech: The heart of the modern era of finance". We know that Online platforms gave the world a lot of convenience and flexibility. Especially, any technology that aims to improve and automate the use of financial services has become an integral part of any business and also helps the consumers to better manage their financial processes with the use of specialized software and algorithms used on smartphones and computers. Blockchain and cryptocurrency, open banking, mobile payments, crowdfunding, and online financing can be great examples of Financial Technology. Hence, we hope to convey our ideas through the articles in this magazine.

- Dr. Harshali Patil,
HOD, Computer Department.

Message from the Faculty In-charge

"FinTech is not only an enabler but the driving engine"
- Pierre Gramegna

Financial technology has seen tremendous advancements in recent years, including mobile payments, digital currencies, block chain and stock trading, insurance lending, loan fraud detection and countless others. The disruption and evolution in banking and financial services caused by digital innovation has definitely made finance more accessible and less intimidating. Since its birth this technology, which now happens to be a way of life has evolved. Fintech today encompasses a wide range of industries and sectors, including education, fundraising, and investment management. Cryptocurrency and blockchain were born in parallel with fintech advancements. Non-fungible tokens (NFTs) have grown in popularity since then, becoming one of the most popular concepts in the blockchain ecosystem and a result of fintech advances. From mobile car insurance to wearables for health insurance, the insurtech field has also seen a rapid boom.

If we go deeper into the impact of this revolutionary technology, we can see how it is reshaping the whole banking industry, with banks moving toward digitization. It has taken this a step further by eliminating the need for paper, reducing the need for physical presence, and eliminating the need for cash. This sector's innovations have redefined classic banking operations, from customer experience to risk management, and are assisting in the elimination of fundamental difficulties that humans have encountered in the finance field. It makes use of artificial intelligence (AI) and big data to eliminate money-related human mistake. Mobile connectivity is widely used by businesses and banks. The number of people who use this type of service has increased as a result of this. There has been an improvement in transaction quality and convenience; a more time-saving and hassle-free choice has been discovered. Customers have the ability to to use smartphones and tablets to manage their finances making it available at their fingertips. This breakthrough technology, however amazing and mind-blowing it may be, comes with its own set of challenges. Because of an increased reliance on mobile devices for everything from managing bank accounts to checking credit ratings and other tasks, people are more vulnerable to cyberattacks than ever before. Biometric data, emv technology and, data encryption are a few of the latest security solution adopted by banks and companies. However its upto users who have to be extra careful and vigilant.

Over the last several years, chatbots and artificial intelligence, blockchain and crypto assets, robotic advisors and other digitilization have effectively broadened our imagination of the finance sector and its scope Fintech aids in the transformation of traditional financial services. It promotes innovation through the development of new products or services. The best words to define the future of banking technology are fast, secure, and simple, and it will only get bigger.

- Mrs. Veena Kulkarni,
Faculty Incharge, Nimbus.

Message from the Editor

The pandemic compelled us to make significant changes in the environment around us, and despite the challenges, financial transactions did not come to a halt. As a result, "FinTech - The Heart of Modern Era Finance" was chosen as the topic for this year. Technology advancements and breakthroughs in a variety of industries have played a critical role in bringing about such drastic changes in such a short period of time. As humans, we have a responsibility to not only learn from our previous mistakes, but also to predict and implement innovative solutions in the future. The topic is in line with the department's philosophy, which promotes the deployment of innovative solutions as well as looking ahead to the next decade of possibilities.

As the editorial team, we attempted to introduce a variety of topics of interest, ranging from Blockchain to Artificial Intelligence, as well as their interrelationships with Nimbus' current theme. We would like to express our heartfelt gratitude to our Principal Dr. BK Mishra Sir, Branch Councilor Dr. RR Sedamkar Sir, our department's HOD Dr. Harshali Patil ma'am, and Faculty In-charge Mrs. Veena Kulkarni ma'am for providing this platform to the students and guiding us through the process from concept to completion. As editors, we've had a great time creating and editing the magazine. We hope you enjoy reading the 2022 edition of Nimbus, which is both informative and interesting.

- Gurleen Pannu, Kunal Bhatt, Tarique Ahmad.

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Student Article

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Student Articles

Role of FinTech in the Post-COVID-19 World

- Aditi Shah SE Comp B

Fintech has become a buzzword in the financial sector, with the potential to increase financial inclusion, enhance people's daily lives, and stimulate growth.

COVID-19 has been an unexpected catalyst for technology adoption around the world.

Online purchases and activities are no longer a luxury, but rather a requirement. Banks are launching digital channels so that clients can bank from the comfort of their own homes and so that they can provide further assistance to distressed borrowers. For the first time, senior citizens are adopting QR payments and digital banks. Teleconferences are used in schools to conduct classes. Grocery stores are increasingly relying on internet ordering and delivery. Telemedicine is now being offered by doctors. The list goes on and on.

People will expect the same simplicity and seamless experience in other parts of their lives as they adjust to a digital lifestyle, including financial services. Fintech has become a term in the financial sector, and it has had a big impact on banking, insurance, and investments. It also offers a one-of-a-kind ability to increase financial inclusion, improve people's daily lives, and promote progress. Fintech is expected to play a critical role in the post-COVID-19 environment, according to predictions. And, in order for this to happen, the Fintech industry must evolve and adapt to the new environment.

Following are a few ways fintech companies can hope to stay relevant in a post-pandemic world where the 'new normal' will be the norm.

1. Blockchain startups to innovate

Blockchain is a technology that makes a computer file immutable and allows for its widespread distribution. This technology is causing havoc in the financial services industry because it has the potential to save billions of dollars per year. Many trends are emerging in blockchain technology, and financial institutions are utilising it for smart contracts, digital payments, identity management, and share trading. However, in the long run, it has the potential to alter the industry's dynamics.

Data is becoming more vulnerable as the number of digital transactions increases. Fintechs will need to educate customers about the risk as well as how to avoid fraud. For the same reason, Fintech firms will need to focus more on safely managing customer data and introducing new data security features. Blockchain can greatly aid in the detection of digital payment fraud by augmenting real-time transaction data sharing and agreement among all parties, thereby eliminating fraudulent activities.

2.Fintechs to improve the profitability of financial institutions

Fintech firms can help traditional financial institutions improve their profitability and operations. These companies can improve several functions that require human intervention, such as customer registration, account management, risk assessments, security checks, verification, and payment processing, by leveraging their technical expertise and inside knowledge of banking systems. With the

addition of the COVID-19 pandemic, the issue of making credit more accessible has come to the forefront.

3. Personalization via big data and AI

The world has witnessed the application of big data and artificial intelligence (AI). The involvement of large technology companies would hasten their integration into various business sectors. Financial institutions can now store, analyse, and act on unprecedented amounts of customer behaviour data. When equipped with the right data, these technologies can provide customers with more advanced, personalised financial products and services than traditional banking ever could. The combination of a wide range of services with AI-powered solutions may enable the right marketing experience for customers at the right time.

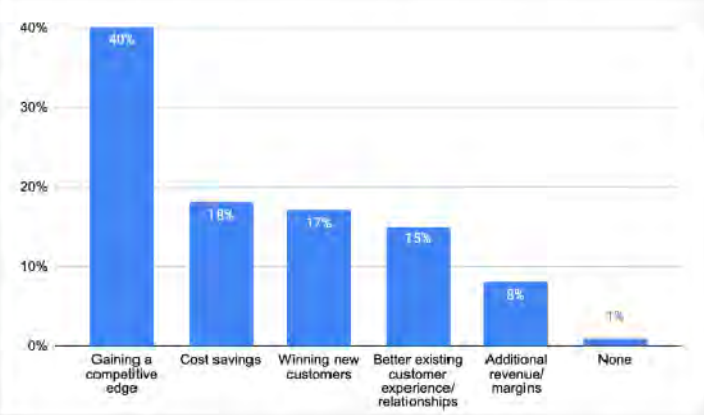
To summarise, as Fintech startups evolve to remain relevant, it will be a win-win situation for customers, and we can expect Fintech to become an increasingly important part of our financial lives in the future. middle of their journey towards seeking a system that provides an agile, secure and flexible ability to adapt to consumer needs. Fintechs and financial institutions of all sizes are looking to meet the challenges resulting from acceleration in the digital landscape, and it seems data analytics solutions will rank as one of the most weapons in their armaments going forward.

Role Of Data Analytics in Fintech

- Aruna Nishad SE Comp B

Since the first enterprising accountant in ancient Mesopotamia decided to log on a tablet providing the most bushels of crops stored in his master's warehouse, humankind in every industry has been dealing with data, and day by day, every moment, it's relentlessly increasing generating humongous amount of data and thereby endless opportunity. The data revolution in financial services has already started. With financial institutions well acquainted with data, data analytics is being immensely used in making data driven decisions and actionable insights, learning about consumer behaviors and driving innovation and growth to get the most out of their financial businesses.

In the 70s & 80s, the banks relied on limited highly trained technical specialists to make sense of database modelling, and faced a series of external challenges in the competitive landscape. Today, institutions of any size can connect, collaborate and analyze data to drive better business decisions, get access to real time dashboards and visualizations of their business reports through entry level understanding to deeper analytical trends.



As companies begin to interact with big data, seeking to operationalise findings from enormous datasets, the adoption rate for business intelligence and analytics software as well as advanced analytics is on the rise. Though big data analytics has always been the realm of larger organizations, as we move in the new decade, business intelligence and analytics is set to become the real differentiator at the center of the financial businesses. Over the past few years, the embedded data analytics has replaced the traditional intelligence platforms, now users don't need to leave their workflow to monitor data and analytics, there's no more toggling between separate tools to perform analytics, embedded data analytics offers real-time, interactive data visualization within an application, removing the need to switch between programs or windows.

Financial institutions have started to realize the potential of catering to different generations through tailored services and products. Understanding this consumer relationship at a microscopic level can be a game changer in the ongoing fintech marketplace. According to research done by Tableau, 17% of the organizations have seen "Winning new customers and clients" as the key benefit of a modern analytics capability. Almost 40% of the fintech organizations stated that the major advantage of deploying business intelligence suites would be gaining a potential edge over contemporaries and major rivals.

Looking at theresulis, we can see that data analytics plays a strong role in fintech companies and institutions. Firms are still in the

middle of their journey towards seeking a system that provides an agile, secure and flexible ability to adapt to consumer needs. Fintechs and financial institutions of all sizes are looking to meet the challenges resulting from acceleration in the digital landscape, and it seems data analytics solutions will rank as one of the most weapons in their armaments going forward.

Role of AI in the Financial Industry

- Aayushi Jha SE Comp B

Despite digital finance being well-established way before the onset of the coronavirus pandemic, like many industries, covid19 has accelerated the pace of financial technology industries as the demand for online banking and payments continues to rise. With this change comes the introduction of artificial intelligence (AI) and machine learning (ML) which have been among the key drivers of growth and sustainability for financial companies.

Here, AI Magazine looks at three different ways AI can be applied within finance to harness growth and boost productivity.

Fraudulent transactions cost economies a significant amount of money every single year and are a significant problem for many financial institutions globally. Not only does fraud financially impact companies but can also be damaging to a FinTech company's reputation.

AI can be used to analyse a large number of transactions to uncover fraud trends, which can subsequently be used to detect fraud in real-time.

When fraud is suspected by an AI model it can reject transactions altogether or flag them to a member of the team for further investigation. In doing so, this allows investigators to focus their efforts on high-risk fraud attempts.

Customer support powered by AI

There are several ways AI can improve customer support in financial companies, one key way being the introduction of chatbots. powered chatbots can not only minimize the workload placed on call centres, but they can also make the customer experience for those with simple questions easier. This technology makes communication between customers and banks easier and easier by resolving simple complaints using automated scripts. The

chatbot improves the banking experience by freeing up staff time by refusing to serve customers with simple tickets, freeing them to focus on more urgent and complex issues. The chatbot has also been proven to help financial institutions expand their customer networks.

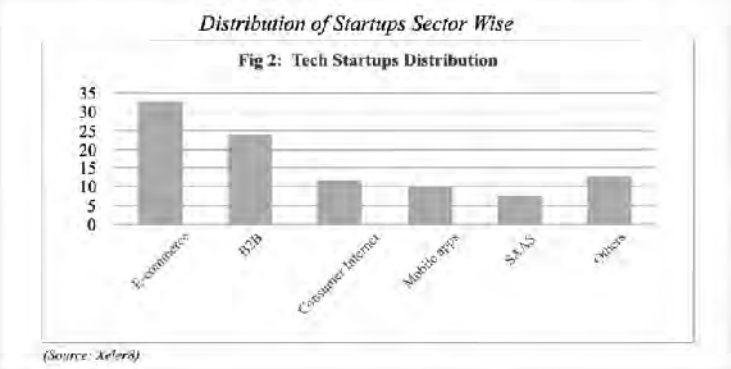
In the aftermath of the coronavirus, many people are struggling to recover from the financial problems caused by the lockdown. This means that demand for financial aid is at an all-time high. One of the biggest challenges faced by lenders in the financial sector is the amount of work and time required to evaluate and approve loan applications. Manual underwriting can be a time-consuming process but can be automated with a dedicated AI application.

AI can perform real-time analytics to help automate microloan approvals and evaluate large transactions, such as mortgage applications.

Startups in India

- Aditiya Mogare SE Comp B

A startup is a company or project undertaken by an entrepreneur to seek, develop, and validate a scalable business model.While entrepreneurship refers to all new businesses, including self-employment and businesses that never intend to become registered, startups refer to new businesses that intend to grow large beyond the solo founder. Startup founders are called entrepreneurs. According to me the difference between an entrepreneur and a businessman is value addition.Businesses have been around since ages but the wave of startups is because of the value addition as an entrepreneur has problem solving approach to better the world whereas a businessman wants profits irrespective of the approach India is a huge country, with 65% of the population under the age of 25 to 35 years. The initial growth in India did not happen overnight, but



gradually, over time. However, if one were to lay down the exact year the reform process that began in India, would be in 2008.

We are all aware of the great recession that hit the world in 2008 and forced businesses around the world to split their resources and lay off workers in large numbers. In India, it has greatly affected IT professionals, who have grown increasingly fearful of their jobs and are beginning to look for different ways to keep themselves employed. This fear, along with the insatiable desire for prominence, shook the new nation and made its people break the chains of meekness and challenge. Entrepreneurs, their associated startups and the subsequent growth of their companies have a vital impact on the health of our economy. India is the third largest startup country in the world and has a huge market for various

products. But the rate of startup failures in India is very high. And about 90% of startups in India should end up closed due to various factors. The number of start-ups in India is growing day by day as people now have a greater interest in business and improved government policies and work environment make it a suitable starting point for growth and expansion. Currently, about 11500 startups are operating in India. There are about 5200 tech-based startups, and about 6300 non-technical startups working in India.

It is very clear from the graph above that E-Commerce has the highest number of technology-based startups in India, comprising about 33% of total technology-based startups, followed by B2B, Consumer Internet, mobile applications, SAAS. Most E-Commerce companies such as Flipkart, Paytmetc. are very popular with the people of India, and are very successful.While, non-technical startups include various sectors such as Engineering, Construction, agricultural products, and Textile etc.

Startups in the beginning have a very high

mortality rate in the early stages and often fail at first. About 45-50% of startups die even before protecting the seed stage foundation, i.e. without producing any funds. The early years were called the "valley of death". Getting started requires top support for the first level of kicking only. If any startups survive the early stages, they are more likely to succeed and have less failure over time. As the startup generates more revenue , their chances of survival increase dramatically. Lack of funding is one of the main reasons for the failure of the startup. Most startups remain unsupported and eventually lead to their closure. About the first 90 percent failed to survive the market.Too many startups come up with the same idea, lack of new solutions and work in the same field, and fail to raise money and eventually close. Many entrepreneurs set up a start-up without proper research on the market, which ends up not being selected.

Startups are becoming a very essential part of current economic progress and this momentum needs to be strengthened further more. Future studies should focus on key business models and new ways to improve performance for the better future. The startup culture in India has grown significantly. With shows like Shark Tank India the general public has also gotten acquainted with the startup culture .The journey of an entrepreneur that people go to see and experience was a huge achievement. After this startups and entrepreneurs would be celebrated in India . This would create more startups and more employment creating a win-win for all.

THE LIFE WITH FINTECH - THE BEGINNING

- Jatin Vishwakarma, Saurabh Vishwakarma SE COMP C

Fintech is a combination of two words, Finance and Technology. Finance is nothing but a process for raising funds or capital for expenditure. Therefore, it means finance using technology. Fintech has revolutionized or evolved the finance industry very drastically. It has developed a significance at the national as well as global level. It started way back in 1860 by verifying the signature by a bank and became successful in 1866. 'PENTELEGRAPH' is a device used for this purpose.

An example used in daily life is the ATM which has the availability of cash 24/7. Nowadays, it has reached a different level though it keeps on rising. The types of services that have improved with the help of this technology are:

Lending Money.

In earlier days, when people needed loans, they used to head to the bank and then apply for a loan. Approval of loans took 2-3 working days. But using Fintech, it is done within a few minutes. Their whole system is automated and approval is quick.

Payments.

The fintech industry has developed many applications and software. Payments are done at the tip of the finger and the days of a long queue in the banks are gone.

International Money Transfer.

Earlier for an international money transfer, you have to pay hefty fees for it, but with many fintech companies, it becomes cheaper and also takes less time and there are many more.

Fintech in India

As of 2021, the Indian Fintech market size is $31 billion. It is the third-largest fintech ecosystem in the world. And also, one of the most secured. India's fintech ecosystem is one of the fastest-growing ecosystems world.

The Fintech ecosystem wave started in India in 2009 with '1' and then Google wallet. Today, there are a total of 6,636 fintech start-ups in India. The government of India helps this start-up by building on the most secure way of transacting, which is UPI, managed by NPCI. This organization coordinated with many banks to establish an encrypted system. Only a few banks in India are allowed to share this UPI method for building fintech applications/Software. Examples of giant fintech start-ups are 'Paytm' and 'PhonePe' these two start-ups are dominating the fintech industry right now. PhonePe's market share is 45.92%, and Paytm's market share is 12.86%. So, due to the entire working culture-shifting online and accepting digitalization in life, this lockdown boosted the fintech industry, which is growing compared to the past.

Future of Fintech

Let's look at a few more statistics before we tell you the future of FinTech in India.

Digital payment transactions have increased drastically, increasing from Rs 2 trillion in 2019 to Rs 4 trillion in 2020.

From January to August 2021, digital transactions totaled Rs 6 trillion.

The value of Fintech transactions is to rise from $66 billion to $138 billion in 2023 at a CAGR of approximately 20%. As of December 2021, India has over 17 Fintech businesses that have achieved the Unicorn Status.

What do these figures and statistics suggest? Fintech firms are changing and remodeling/re-building themselves to adapt to future technology to make India the Fintech hotspot. India has a mix of Fintech evolving quickly and users willing to adopt digital platforms. Though the FinTech sector in India is tremendously growing, it still needs to learn how to tackle the issues that might arise when these companies expand beyond the urban areas. Today is merely a speck on the canvas, and things are just beginning to change.

FINTECH

- Harshita Mishra SE Comp B

Financial Technology mainly termed as "Fintech" refers to new technology that aims to improve and automate the delivery and use of financial services. Fintech, at its most basic level, is used to help organizations, company owners, and individuals better manage their financial operations, procedures, and lives through the use of specialized software and algorithms that run on computers and, increasingly, smartphones . The term "fintech" is a mix of "financial technology" and "financial innovation." Fintech comprises a wide variety of sectors and industries, including education, retail banking, charitable fundraising, and investment management, to mention a few.

It also includes the creation and use of digital currencies like bitcoin. While that sector of fintech gets the most attention, the major money is still in the traditional global banking business, which has a multi-trillion-dollar market cap. FinTech makes financial transactions easier for consumers and organizations to complete, making them more accessible and affordable. It can also refer to businesses and services that use AI, big data, and encrypted blockchain technology to enable highly secure transactions within a company's internal network. Fintech, in general, aims to simplify the transaction process by removing potentially superfluous stages for all parties involved. Although the new technology emerges with great advantages still concerns about cybersecurity in the fintech industry have grown in tandem with the industry's growth.

The tremendous global expansion of fintech companies and marketplaces has increased the exposure of weaknesses in fintech infrastructure, making it a target for cybercriminals. Fortunately, technology continues to advance, reducing existing fraud risks and mitigating new ones.

To conclude , financial services are one of the world's most severely regulated industries. Regulators have emerged as the number one concern among governments as fintech startups take off, which is unsurprising. Regulatory issues for financial services organizations have risen as technology is integrated into their procedures. In certain cases, the issues are caused by technological advancements. In other cases, they show the tech industry's eagerness to disrupt finance.

Using AI/ML In Fraud Detection

- Jyeshtha Patil SE Comp B

Artificial intelligence (AI) and Machine learning (ML) are one of the greatest evolutions in the field of computing and data processing. As businesses and various organizations undergo digitalization, they are faced with a slew of data which can be difficult to manage. Detecting frauds in the overwhelming conditions of the corporate world is an important application of machine learning with success in the fields of banking and insurance. About $600 billion of the economy is damaged by cybercrimes and frauds such as false invoices and business email compromises. Causing either loss of trust or money.

AI can be used seamlessly in the process to detect malicious behavioural trends and also help in curbing fraud rates in real time. One can implement a model in such a way that the suspicious transactions can be flagged or terminated altogether to protect the customer from loss and may also be able to track down the fraudulent account. While the ways the investigators handle the instance can help us use the machine learning part of the model and the model can be trained to ignore or act according to previous instances of similar kind hence allowing the investigators to focus on a more promising flag. This will help tell the difference between legal and fraudulent transactions while ML also learns to respond to newer methods or conditions.

Behavioural analytics is an important implementation of ML where a model learns to predict the behaviour of the instances at a granular level allowing to hence closely monitor a transaction. This helps in determining the habits of the user which are updated to the model real time hence allowing it to process other similar instances faster and allow it to forecast the behaviour in the near future. The behavioural changes include monetary and informational data changes as small as the changes to an address.

The rate of success of a particular model depends on quantity and breadth of the data-set than the intelligence of the algorithm. This also implies that greater the data set of a model the more accurate and precise predictions can be made. When it comes to fraud detection a model benefits from the greater instances handled, be it frauds or valid. Fraudsters keep making it a challenge task to keep the accounts and data safe, hence also making it more advanced and dynamic, which causes machine learning to excel to greater extents.

The narrow line between valid and fraud is where model precision matters the most, which can be achieved by processing extensive number of instances. This gets complicated since patterns in data need to interpreted and updated in the model to allow ML and AI to work together to maintain the trust and avoid any monetary loss.

Cryptocurrency & Blockchain Technology

-Mrutunjay Pandit SE Comp B

Cryptocurrency serves as a medium of exchange, a store of value, and a unit of measure. While cryptocurrencies have little inherent value, they are used to price the value of other assets. Bitcoin is a cryptocurrency (means of payment) but it can be seen as a speculative commodity (how much is it trading for), it was launched in 2009 and it is widely considered the first digital asset. Digital assets, also known as crypto assets, are digital representations of value made possible by cryptography and blockchain. Their original intent was to serve as a vehicle for transferring value without the use of a bank or other trusted third-party entity. Cryptoassets (digital assets) are categorized into three main types: cryptocurrencies, crypto commodities, and crypto tokens.

Perhaps in response to the 2008 global financial industry crash, a person, or an entity, named Satoshi Nakamoto developed a protocol for a peer-to-peer electronic cash system. That protocol became the foundation for distributed ledgers called blockchains. Blockchain is a bit like a global spreadsheet or ledger. It does not have a central database; instead, it runs on computers provided by volunteers around the world. A blockchain is public: anyone can view it at any time because it resides on the network, not within a single institution. A blockchain is encrypted and it uses public and private keys to maintain a sort of virtual security. A blockchain allows a person to safely send money to another person without going through a bank or financial services provider.

Many in the financial services industry refer to blockchain technology as distributed ledger technology. And some see blockchain as a more reliable database than their existing databases. As digital money becomes increasingly widespread and coupled with an estimate that more than 50% of the world's population owns a smartphone, some believe that blockchain technology will supplant the banking industry's old technology. This new financial technology partnership could be the pathway to widely available digital financial products.

Crypto Currency & Blockchain

- Diya Vora, Sakshi Sharma, SE Comp C
Maitri Vaghasiya, Sparsha Shetty

What is a Blockchain?

In 2008 Satoshi Nakamoto introduced Bitcoin, a fully digital and decentralized crypto-currency. Blockchain is a solution to the double-spending problem in Bitcoin. It has a peer-to-peer decentralized distributed ledger and has a replica of all nodes participating in the system. Blockchain has transparent transactions by maintaining a record of all from the beginning.

It is a technique to store information in a decentralized manner. There is no central authority controlling the entire data and information. An example is Bitcoin currency is decentralized. No central agency controls Bitcoin. A lot of ways to store information, some of them are Pen and paper, excel sheets. Similarly, in a Blockchain, the information is structured in the form of Blocks. Each block is made up of three main things, the first is for storing any data or information in the block, and the second one is called a Hash which has fingerprint sorts of codes, which is a way of uniquely identifying a particular Block amongst many blocks. Every block has its Fingerprint. The third one is connecting all blocks through the means of storing the fingerprints of previous blocks. The third block will have its fingerprint and also the fingerprint of the block behind it. It will also have information on that particular block in it. In this manner, all the blocks are linked to each other. So supposedly, if you change or try to temper the data in any block, then the fingerprint or hash of the block will change. And if the hash of one block changes then the hash of all connected blocks will change and eventually entire blockchain will be destroyed. For this particular reason, it is next to impossible to alter with data in a blockchain. The second reason for it to be called the most secure form is Decentralization. You will not find a blockchain stored in only one computer. Blockchains are stored in a network of computers. All the computers around the world belonging to the participants of the blockchain will have a copy of this blockchain. So instead of having one central authority managing all databases, blockchain is managed and run by a network of computers collectively. The people who are part of this blockchain network by having it stored in their computers, all are known as Nodes. Amongst these nodes, some of them are Miners. Whenever a new data is being added to the blockchain, the work or job of miners is to verify the data, whether the person who has added the new data is aligning properly with the rest of the blocks or is the data correct enough to form and maintain a chain or the person is trying to tamper with it, this all work is done by miners and they verify the records. For this particular observation or for the fact that why do miners will verify this act of blockchain, do they receive any rewards for it? Well yes miners, get the reward in the form of having Bitcoin shares. To some extent, miners can be a part of Bitcoin trading by maintaining and joining this Blockchain technology through their computers. But if they don't do their verifying incorrect manner they also get punishment which is in the form of losing their Bitcoin shares. So here, the main reason for Blockchain technology is that anyone can be a part of this new technology, all you need is a computer and some basic knowledge of how to connect to this network that is already formed.

There is thus no need of having the election process conducted in a centralized manner where citizens have to trust on Election committee for conducting it fairly. By using Blockchain, you can verify whether your vote has been counted or not by yourself. Practically speaking, how can a non-technical individual be a part of this? There are platforms or organizations available online that mainly focus on organizational bodies that want to be part of blockchain networks. What they do is, build their platform on a Blockchain network and allow their clients to put their websites or database deployed on it. This organization helps you to deploy your application or portal to deploy on their platform which is built on decentralized Blockchain. So for example, if the Governing body, approaches any of these organizations they can convert their controlled database into a part decentralized non-controlled body, where nobody can control it on their part and only Blockchain networks can sense its presence on its networking part.

Blockchain: The tech powering Cryptocurrencies

Cryptocurrencies are based on blockchain. Cryptocurrencies are a distributed public database that records and maintains all of the transactions done by currency holders.

The mining process forms the units of cryptocurrency. The mining process involves employing computer power to solve complicated mathematical problems that result in coins. Every user may also buy cryptocurrencies from any brokers who have crypto coins or currencies to store them in secure wallets.

You do not own anything physical if you hold bitcoin. You have a particular key that allows you to send a record or a unit of measurement from one person to another without requiring the assistance of a responsible and trustworthy third party.

Cryptocurrencies and blockchain technology applications are still in their infancy in terms of financial utility as well as with further adoption projected in the future, along with the fact that Bitcoin has been present since 2009. The technology might be used to trade stocks, books, and other financial assets in the coming years.

- How are blockchain and cryptocurrency-related to each other?

Blockchain and Cryptocurrency are two different technologies, yet they are closely intertwined. Both the terms are used occasionally and frequently nowadays in almost every sector.

Blockchain is a digitalized and decentralized public record. It is simply a way of collecting digital information or different blocks that are kept in a public database or the chain.

When validated transactions occur, the data is stored in blocks, and the blockchain grows. Since blockchain technology is also a decentralized digital system, it is used to run cryptocurrencies too. It is described as digital or virtual money secure by encryption and is not owned by any single authority, making it resistant to authoritative control.

Bitcoin was the most well-known and first cryptocurrency, but there are now many more on the list. Moreover, Bitcoin was formerly the only blockchain. Despite widespread doubts and skepticism, it appears that both technologies will continue to play important roles in our economic sys-

tems for the foreseeable future. A lot of things have changed and evolved in recent years, but there is still a lot of confusion since the concepts are so closely related.

• What are the benefits of using Blockchain?

The benefits one can get are unlimited Bandwidth and 100% uptime and all other benefits that are of decentralized blockchain. Apart from this, the benefits of using Blockchain in several sectors are listed below:

Blockchain in businesses

Blockchain to businesses has expanded its prospects and has gone far ahead in the field of crypto-currencies. For this particular sector, it provides services of

having secured transactions, managing digital relationships, eliminating intermediaries, tracking and tracing using nodes, and many more business integrations. When applied to the healthcare industry, as mentioned previously it helps store data of patients, not limited to that only, the technology also offers maintenance of discovery. It secures advanced medical discoveries without risking critical data being publicized in non-medical sectors. It helps track medical supplies and aids routing from one place to another.

Blockchain for Players

The global gaming market bagged a high valuation and started to stand out as a multi-billion dollar industry through its competition and its developing software features rapidly in due course of time. Online gamers found a legitimate way of generating income through Blockchain Technology. The game became a gamble when players started reselling in-game amenities to other players and thus boosting their gaming levels and increasing collaborators. Blockchain proves to be a secured platform for transactions as they can use it as per their need.

Blockchain for tracking & tracing

When it comes to the delivery of products ordered from retailers, often we hear about late supplies or delays in the process. This ultimately losses on freshness, excitement, and eagerness to purchase any supply from the internet virtually. The perfect block-chain driven solution can be simply implemented by adding QR codes to the products, which helps in accessing the entire journey right from where the product is manufactured to the shipment process to the retailer receiving the product, this makes the process much more efficient and viable to use and track it frequently whenever the user wants to. This also keeps details very much protected between the product brand and the customer purchasing that brand, no third tracking company needs to be involved in the process of shipping it.

With the combination of distributed ledger technology, tokenization, confidential computing, and many other technologies, you can create a network of collaborative ecosystems to increase transparency and nimbleness. Blockchain can eliminate security bottlenecks by protecting IP from mishandling and streamlining project management.

• What about privacy?

So one might wonder that, if anyone on the network can see the information in the blockchain, and the copy will be present on every computer of the network, so any information you put, in will it cease to be private or can be seen by anyone? The information in the blockchain is not only secure but also privacy protected. It can be so because each computer in the network has its own Private Key and one Public Address. When you log in on your email Id with your password, only you can see what it has in it. Without a password or Id, nobody has access to it. Alike it, when you want to share Blockchain shared resources with another network you provide them the Public address of your computer and not the private key. The things stored in the private key solely remain visible, and accessible to you privately. Nobody on the network can ever see what it has stored on it.

So when you vote for some candidate using a Public Address through a blockchain system, then even your name will be private. The other computers on the network will only see that someone has voted for this candidate. But who the person is behind the Public Address, their details, nobody on the network can ever know. Thus privacy is maintained in a very sophisticated manner.

Benefits here are not only restricted to having information stored in a decentralized manner, but also to have a good network to see this stored information. For example, when you visit any governmental, non-secure sites, a low-bandwidth application you may have seen to get an error of 404 or site may not be loaded instantly, this is because of carelessness in maintenance or systems are not maintained due to human errors, so to avoid this blockchain proves to be a viable option for having back up through it, as it runs much more efficient manner than this original domains. Transactional IDs of blockchain remain to be live forever until and unless a catastrophic event occurs where an entire network around the world crashes, which is next to impossible to happen.

- Blockchain avoids errors to which limit?

Supposedly, among many networks, a particular Computer or PC is causing a false transaction. Here, in this case, the false transaction happening is only identified through one computer or network so, this error will be corrected by other networks and whatever operation is being carried out by that false computer it will be stopped and it will not be allowed to carry further. Here majority vs minority concept appears to happen, where a majority of the network for rectifying the error. Here the criteria of this majority correctness are 51%. Here arises the disadvantage of using blockchain.

- Disadvantage of Blockchain

If one wants to alter or do fraud in the Blockchain one would need the majority of at least 51%. If someone on the network hijacks 51% of the computers, he/she will be able to do fraud in the system. But realistically, to hack 51% of the computers on the network becomes quite next to impossible, because all of them are decentralized and not connected. Almost even if one computer on a network is hijacked, the system does not crash, it continues to operate as the majority is still in operatable mode. So, it becomes quite possible that Bitcoin is evitable to operate without any disruptions, where millions of computers around the world are connected on a network. The larger

the Blockchain and the more computers and people are connected to the network, the more increasingly difficult it will be to hack the Blockchain.

In Africa, Sierra Leone is the place where we can already see on the ground example of having Elections conducted through Blockchain technology.

Some experts believe that having conducted elections and voting through blockchain is not right, according to them it has more disadvantages than an advantage, the hacking possibility is there even though it is difficult but to hack on an individual level it is possible to hack someone's system. Attacks can be carried out where a network can be switched off. Thus it is not that simple to have a solution but is a topic of debate about how it can be implemented and whether it is right to implement or not.

- Sectors where Blockchain might be useful

There are some sectors where the concept is already thought to implement such as the healthcare sector, where patients' data can not only be stored in a centralized manner but on Blockchain. In trading also it can be used very well, where it can maintain the privacy of suppliers. Property management, crowdfunding, Management of government data, etc. can be done in an efficient manner using Blockchain. Nowadays, the government stores much information about its citizens on their portals but are unable to keep it private and protected, often we get to hear about government databases being hacked, but if blockchain is used it will be prevented to happen. Because we will not have to trust the government to protect it, a decentralized network can verify all of it for us and make it work for us.

Blockchain technology is useful to a few start-ups which mainly deal with interacting with the platform by building their network in the Blockchain server. The first step to implement the system was to create a private blockchain to ease testing and experimentation. After building the platform, data records are deployed on this particular developed platform which relies on a Blockchain network of nodes. After successfully setting up the private blockchain and deploying the smart contracts, the backend was eventually complete. The next step was the deployment of GUI, i.e., the frontend of the Application. The implemented frontend is composed of different files such as HTML, Javascript, and CSS files for the portal webpage and its interactions, along with several Embark configuration files. The visible part of the GUI is the portal webpage running on a web server executed on the laptop. This environment was then used to deploy a blockchain storage GUI, the frontend and backend. Finally, we deploy the database and connect it to the private blockchain. All peers could then connect to the blockchain and store data in the off-chain database. This completes the implementation and the deployment of the testbed.

- The role of Blockchain in government services

When citizens' confidence in their government starts to stutter, or the pattern of perpetual mistrust gains a significant place in the minds of people, there arises a need for the establishment of credibility amongst these skeptical citizens. In simple terms, transparency indeed alters citizens'

sentiments by enabling them to access and verify their government statements. It is also high time that we know and acknowledges when every innovation takes place there arises the existence of Governmental Policy embedded in it. Issues of data breaching, data loss, and system hacks have been reported in government systems a lot when it comes to preserving all the records. To avoid this, an aspect of a blockchain-based solution called immutability comes into play, which ensures the security of an entire country. By removing the possibility of a single point of failure, the Blockchain data structure improves the network's protection and in turn, renders the network unhackable. When appropriately implemented, blockchain technology may help reduce costs while reducing redundancy, streamlining procedures, increasing protection, reducing audit burdens, and ensuring data integrity is preserved well. The effect of disruptive technology on government is not limited to a single country. The position that Blockchain technology can play in local government is also unmissable. Complete transparency, digital payments, and the abolition of middlemen are the activities that will define the future of Blockchain in digitizing local government.

- Future of Blockchain

In recent times, when many cloud-based websites and applications are loosely available on Internet, it will soon move to Blockchain technology. In the next few years, social media platforms, censorship apps, copyright issues, video streaming, or any basic portal also all of it will move to Blockchain as the user today is hard to trust for its transparency with their work. For this reason, some people believe that Blockchain can revolutionize the World. It has the potential to dramatically change the way we live and operate. It can give us insights into the origin and quality of things like the food we buy or eat, provide greater control over our healthcare and wellbeing, secure our financial transactions, and conduct businesses with greater efficiency and less risk. In the future, blockchain technology is expected to provide the modern infrastructure required to build cutting-edge business applications.

- To what extent both the technologies can have the potential to work together forming a new techno-savvy era?

Blockchain is not an optional or alternate technology for

cryptocurrencies; instead, it is essential. Finally, the roots of blockchain and cryptocurrencies are intermixed. However, the caliber of both the technologies does not match when one of them fails.

Blockchain is not only restricted to the financial industry. Moreover, it also offers a variety of solutions that are likely to disrupt a wide range of sectors in the upcoming years. When combined, many still non-explored aspects are yet to be looked upon and implemented. It is high time that both the fields are publicly made available on a larger scale, the network expands and it gains more users daily to surpass the usage of old technology. Blockchain's ongoing normality suggests that it may be the future.

Digital Currency

The Security of Upcoming Currency

- Srushti Sankhe SE Comp C

Is destiny a rule of digital currency? The word money has become a critical juncture, which determines how the people can create, access and control it. Nowadays the virtual or the digital money has came a long way and gained a massive popularity for the youth of online generation who are persuading towards the worthwhile of virtual market and are nicely versed with significance of investing . For monitoring those cash records the phrase electronic cash being introduced in the market.

Digital Currency(DC) is a form of currency that is exclusively in the electronic form. This currency represents value that isn't issued by any important financial institution or government, however it is accepted by the people as a methods of bills for items and services. Unlike currencies with the printed bank notes or embossed coins this kind of money generally do not have a physical form. It is likewise referred to as virtual cash or digital money or cyber cash. Only computers, mobile phones, or electronic wallets that are electronically connected to the internet or any other designated networks can access digital currencies. Since they have intermediary, it is the cheapest method that allows spontaneous transactions that can be smoothly executed to make cross-border payments when combined with confirmed gadgets.

This money can be either centralized, where the focal point of money supply management(-such as banks) exists, or decentralized, where the control of money supply is pre-determined or democratically agreed. There are some types of digital currencies as cryptocurrency, virtual currency and central bank digital currency. If we talk about cryptocurrency, this is a currency has a real value and payments methods that can be redeemed for services online. Many companies issued their own currencies, sometimes called as tokens. These can be specially exchanged for goods or services, therefore in order to access it we need to exchange the actual currency provided by the company. Meanwhile virtual currency is the type of unregulated digital currency. It is the that is utilised inside particular network it is not issued or controlled by a central bank. And the central bank digital currency utilises technology to represent a countries official currency in digital form.

Another important innovation is digital identities , which are being introduced in many countries with possibilities of wide use of mobile phones. Basically currencies can be exchanged by the means of electronic wallets or say mobile wallets using debit cards and credit cards. Switching from traditional wallets to digital wallets have been encouraged by the government to the people because they are

convenient in many ways. Their popularity during pandemic has peaked due to benefits of non-contact, since then the advent of these digital currencies, has increased even further.

If we talk about digital and a crypto in short, they both are not same. As in digital refers to non contact transactions between two parties which transfers an amount from an bank account to someone else. It stores the cost similar to real fiat cash via digital switch mechanism and its value is not secured by any encryption. On the other hand cryptocurrency is a type of digital currency but doesn't refer to a same transactions, while it stores the value secured by encryption and in short it uses blockchain technology.

The National payment cooperation of India has advanced a interface and is regulated via way of means of RBI that is known as UPI. The Unified payment interface(UPI) is actual time price for fast cash transfer between two bank account. It is agnostic to the type of user and is used person to person, business to business, business to person transactions. The release of UPI, in India has already taken various initiatives to inspire digitalization of Indian economy. Also the report said digital payments are annualising at $2 trillion in India, with UPI being the largest driver, followed by the cards and mobile wallets.

The creation of digital currency will offer further boost to innovative solution as fintechs will be capable to construct a era called digital rupee. The huge adoption of digital rupee may also show to be a sport changer for plenty fintechs and blockchain targeted era agencies in coming year. India is constantly striving to reduce the usage of physical currency in an effort to mitigate menace arising up from black money. India's burgeoning fintech surroundings will benefit further momentum. So the velocity of economic inclusion is definitely set to upward push in coming years. Digital currencies can increase the exchange and open up more than one possibilities to reinforce the monetary fitness of the countries.

Artificial Intelligence & Fintech

- Aaryan Saygaonkar SE Comp C

FinTech or Financial Technology is a type of technology that focuses on making financial services available through software such as mobile payment applications, online banking, online trading services, or cryptocurrency. Throughout the years, FinTech has evolved from the traditional use of credit cards to the modern use of mobile apps to pay for everyday products. The new technology that is introduced to the market is also further implemented to improve FinTech services. Artificial Intelligence or AI is one of such technologies that emphasizes building smart machines capable of performing tasks that need human intelligence.

AI is also being implemented in FinTech to improve its current services. This technology allows FinTech companies to benefit through many of its features. The application of AI in FinTech improves one of its important sectors, customer service. Interaction with the customers through artificial intelligent interfaces such as chatbots or virtual helpers increase offers major potential in reducing on-ground services and helpline costs. AI enhances the security factor in the field of FinTech where services such as the face or fingertip recognition are implemented in the banking apps. The extra layer of security is added through AI in the form of examining the behavioral patterns of the customers for better services. AI also increases personalization for the user, to improve the user experience through predictive analysis.

The finance industry faces many issues, but one of the major issues that affect the industry from time to time is fraud. Fraud affects the companies and their customers financially and also socially. Fraud prevention acts become the focus of many companies to prevent losses. AI can be used to detect such fraudulent activity and inform the user or company about such activity taking place. The act can be reported or prevented before the fraud can even take place.

Financial services like insurance, wealth management, revenue generation, or financial assistance can be automated and improved with the assistance of AI. Its application in the field of finance reduces costs and enhances customer services. Due to these massive benefits, nowadays new AI technologies are implemented in FinTech companies for promising benefits. Bringing technology and finance closer together, Artificial Intelligence helps FinTech companies.

Digitalization in Finance

- Asim Vaibhav SE Comp C

The recent pandemic, COVID-19, caused numerous changes in people's life. As we know, a change has two sides, just like a coin has heads and tails. In our case, it was positive and negative. The negative part was well known to the world, crores of deaths, economic crisis, unavailability of treatment, lack of resources due to no workforce, and various other reasons.

While looking at the positive aspect, a new revolution started. People started moving more towards digitalization. The first important step for the population was the start of digital payments.

Now the question arises, what are digital payments? The answer is that the transactions made with direct account transfer for a small to high-cost purchase.

Today, people have even started using digital payment applications like Google pay, Phonepe, Amazon Pay, and many more for even buying a 10-rupee chocolate. The vital step made by the small vendors who have started avoiding cash and make transactions cashless. It not only saves time but also saves the headache of carrying "khullas". Digital transactions are not limited to this only, but it is expanding day by day.

The Indians used to have misconceptions about getting hacked while using digital transactions. But later awareness efforts made people realize that special encryption is made between the sender and the receiver to transact safely without any money loss. In the initial stages, there were problems like payment used to get stuck, or not being received by the recipient. But as time passed errors were overcome. The vital role of encryption is possible by UPI pin. UPI secures the transaction using a 4- or 6-digit pin.

Digital currency is also a part of digital finance. It existed before the pandemic but grew during the pandemic. Digital currency has types virtual and crypto. The vital difference between the two types is centralization and decentralization.

People have started investing in the various crypto currencies like bitcoin, Ethereum, etc. These currencies are volatile in nature, its value changes accordingly depending on the factor.

Digitalization is a revolution in the finance of the world.

A LOOK INTO MODERN DIGITAL BANKING

- Vandita Gopal, SE COMP A

The idea of standing in a queue waiting just for your bank statements belong to the bygone ages because the advent of digital banking took on the globe.

FinTech was introduced as a technology that was used at the back-end systems of economic institutions and banks. However, since then its definition has changed significantly. Now it encompasses several applications that are consumer based. one among the foremost popular application being mobile banking .So how did this idea of banks at your fingertip gained trust and lead a revolution which hugely impacted the finance sector? the primary and also the most obvious reason was that digital banking provided the users convenience ,today you'll trade stocks, manage funds, and purchase your insurance and foodvia this technology. Except for providing the comfort of accessing money at the comfort of your home, this technology also offered safety which assured the consumers. For instance the RBI had ordered to convert all existing magnetic stripe cards to EMV Chip & PIN cards before December 31, 2018 .A one-time password is used for every transaction with EMV technology, which is embedded within the chip. This strengthens security because the code is just valid for one transaction; therefore, whether or not it's stolen, the thief are going to be unable to do anything with it.

Your data is encrypted and transported via banking channels with high security to keep your information safe from malicious assaults. Checks like Device authentication and six-digit PIN verification have also been implemented by banks. Another great feature offered by digital banking industry are the chatbots. Chatbots are simply pieces of software that employ machine learning and natural language processing to find out from human interaction on a continuous basis. Chatbots are extremely efficient since they automate customer interactions like addressing questions and forwarding customers to the acceptable departments. Other jobs that chatbots can do include providing investing advice to customers. Similarly, a chatbot can assist customers to find relevant information on a company's website. The majority of banks now provide a smartphone app with a user-friendly layout.

Banks have also developed smartphone apps that recognise the user's fingerprints. This function is performed by the programme without the requirement of any biometric software or hardware. Quick access to monies is provided employing a mobile application. A mobile application allows a user to execute a range of banking tasks, including quick bill pay, check deposit, account balance, statements, andmore.

It would be incorrect to not include the impact of e-wallets or the Indian UPI system whilst speaking about digital banking. UPI stands for Unified Payments Interface. The Unified Payments Interface (UPI) is a payment system that enables customers to join several bank accounts in a very single smartphone app and transfer funds without having to produce an IFSC code or account number. to complete any transaction, the user will just must use a virtual address referred to as a Virtual Payment Address (VPA). The banking

concern of India regulates UPI, which was established by the National Payments Corporation of India (NPCI) (RBI). UPI is quickly becoming the foremost popular digital pay-

ment method. Most banks and digital wallets support the UPI interface, and payment apps have begun to embrace it. GooglePay, Tez, Paytm, and PhonePe are just some of the apps available The introduction of cutting-edge technologies, combined with the will from customers for a safer and more user-friendly banking experience, has driven banks and financial services to rely heavily on digital technology. FinTech and digital banking are greater than ever now, and in the coming years, new technologies to link finance with technology such as blockchain, AI and machine learning, and cloud are going to be explored.

FINTECH – THE FUTURE OF BANKING

- Samruddhi Gujar, SE Comp B

What is FinTech?

FinTech consists of two words, "Fin" and "Tech" refers to Financial Technology. Financial Technology is an emerging trend of technology in traditional financial services. FinTech is a sophisticated technology that provides various type of software that is employed for financial product and services. FinTech is an innovative creation of the 21st century that helps its consumers and businesses in financial transactions through digital delivery of monetary products and services. Now FinTech helps financial industries to access their sizable amount of shoppers digitally and provides them fast, easy and secure transactions. And their customers don't have any have to visit bank branches physically. FinTech attracts and retains customers by digitizing data. FinTech

now also includes different industries and sectors associated with Retail Banking, Education, Investment Management, and Fund-raising and also non-profit.

FinTech and the way it's impacted banking?

FinTech isn't any longer a jargon of the banking system.

Instead, it's become a well-known term in technology normally. the world investments in FinTech ventures has doubledtoawhopping$112 billion ascomparedto$51 billion last year. this is often quite an evidence to prove that the digital revolution is at the doorsteps of monetary services sector.This revolution has a large impact on all the banks and financialinstitutionsglobally.

The FinTech for banking has impacted numerous applications and revolutionized the way consumers access their finances. Its impact ranges from mobile payment apps like Square to investment and insurance companies. This profound impact of FinTech may be seen as a possible threat to the brick-and-mortar of traditional banks.In today's digital era, customers don't seem to be keen to travel for services provided by the standard financial services industry. Instead, they like services that are quick and safe. this can be the rationale why FinTech and FinTech is gaining popularity and causing disruption within

the banking and other financialservices.

FinTech in 2022 : The expected trends

The landscape of FinTech is changing at a lightning speed. With each passing day, we are encountering a radical change within the FinTech industry. These transformations are important as they impact everything associated with payments, money, and banking. We experience many of those FinTech transformations on the each day like after we withdraw money from ATM, use virtual cards, transfer money through mobile payment, make pay-

ments via digital wallets, and lots of more. Moreover, with the introduction of cutting-edge technologies, the horizon of FinTech is expanding quicker than ever. When the COVID-19 pandemic hit the planet, the bulk of the companies declined there have been only some businesses which showed the upward trend and FinTech industry was one among them.

Some of the new Fintech technologies are expected to expand within the year 2022 and that they are as follows:

1.Digital-only banks:

Digital-only banks are those banks which offer various virtual banking services like P2P transfers, international remittance, contactless MasterCard with free transaction fees, and with ability to shop for various cryptocurrencies like Bitcoin, Ethereum, and lots of more.Digital-only banks have gained immense popularity in an exceedingly short period. It's majorly because it offers utmost convenience to the purchasers by eliminating tedious paperwork, waiting in long queues, and also the must visit a bank physically.

2.RPA

Robotic process automation are often defined because the process automation technology which utilizes software robots or digital workers to automate the tasks which are usually performed humans. Financial industry has already implemented RPA to chop costs and improve the general organizational efficiencies.

Not only this, but financial institutions have also adopted RPA digital workers to automate various back-end office processes like security checks, customer on boarding, account maintenance & closing, trial balancing, master card and mortgage processing, and lots of more.

The major advantage of RPA is that the digital workers can finish these tasks more efficiently and quickly thus allowing financial organization personnel to specialise in major areas like customer service.

3.REG - TECH

Reg-Tech is an abbreviation of Regulatory Technology which might be defined because the management of the regulatory process within the financial industry via technology. the main functions of Reg-Tech involve reporting, monitoring, and compliance. Reg-Tech empowers companies with the facility of advanced software which will simplify the compliance process with existing regulations and laws. the increase in digital products has also increased the cases of cash laundering, fraudulent activities, cyber hacks, and data breaches.
Reg-Tech with the assistance of massive Data and Machine Learning technology can give crucial data on concealment activities thus reducing the chance related to the
company's compliance department. Furthermore, Reg- Tech can even reduce administrative overhead, ensure financial stability, and protect customers.

Bitcoin - The Internet of Money

- Shivam Dixit TE Comp B

It would have been difficult to conceive a decade ago that we could buy a Tesla or book an airline ticket using a digital version of decentralised currency. That is, however, where we are now. Bitcoin is the most popular decentralised digital currency, allowing users to send money to anybody, anywhere in the world, instantly.

What is Bitcoin, and why was it created?

To understand Bitcoin fully, let us first take a look at the money system used before Bitcoin.

The evolution of money:

Money is one of the essential inventions in Human history.

There was a system known as bartering in use

prior to this period. A barter system, often known as a barter exchange, is a direct exchange of products and services for goods and services. The following method, however, was less practicable to implement due to flaws such as the lack of a double coincidence of wants and a consistent measure of worth.

As a result of the increased necessity for a standard system that everyone could comprehend, some people began to employ precious metals such as gold and silver for different reasons and as a means of transaction. People were able to separate these metals into distinct values, making future planning easier. These metals were heavy, and transporting larger amounts of money was difficult.

Because of the aforementioned drawbacks of gold and silver, people began to deposit their gold in banks and obtain a statement showing how much they had placed. When the merchants wished to buy anything, they might sign this declaration over to other people. As a result, paper currency arose, which is a piece of paper that serves as a means of trade.

In the majority of countries, this system has developed into a government-issued paper money ("fiat"). It was a valid form of payment. It's known as fiat money. The value of fiat money is determined by the issuer's perceived authority and creditworthiness. The central bank's fiat is used to issue and control national currencies. (Central Banks are institutions that control the money supply of the country.) For example, The Reserve Bank of India regulates the Indian Rupee.

The idea behind Bitcoin:

A centralised money system is the fiat currency.

Our financial systems are built on the foundation of trust. The government and the central bank guarantee the value of cash notes

and coins in our society. A hundred rupee note, for example. "I guarantee to give the bearer the sum of one hundred rupees," it reads. It is a pledge given by the Governor of the Reserve Bank of India, the country's central bank. If this signature is missing, the note will be converted to plain paper.

It allows us to estimate how powerful the government and the country's banks are when it comes to monetary policy. The truth is that when individuals deposit money in banks, they are giving the bank permission to play with that money in a way that makes no sense. Banks lend money to businesses and individuals based on these deposits. It is what generates returns, i.e. interest on money placed by customers. Banks have complete control over how money is spent, and citizens have no say in the matter.

Government choices, like those made by banks, can put money in jeopardy. In 2016, when India implemented demonetization, a similar occurrence occurred. 86 percent of India's entire money was rendered useless.

The idea was to have a system where there was no control of people's money to any centralized system, and this was the vision of Satoshi Nakamoto.

What is Bitcoin:

Bitcoin is a peer-to-peer version of electronic cash that allows online payments to be sent directly from one party to another without going through a financial institution. In the year 2009, the concept of Bitcoin came into existence. It was set out in a whitepaper by the mysterious and anonymous Satoshi Nakamoto. There are no physical Bitcoins. "BTC" is a common abbreviation of Bitcoin.

How does Bitcoin work:

There is one public account in digital form of all the Bitcoin transactions- this is called a 'ledger.' A copy of this ledger exists on all the systems that are a part of the Bitcoin network. Those who run this system are called 'Miners.' The miners' job is to verify transactions. Say, A has to transfer 5 Bitcoins to B's account. Miners will have to confirm whether A does have 5 Bitcoins in his account or not. To complete the transaction, miners will have to solve a complex mathematical equation. Every Bitcoin transaction has a unique address. The job of the miners is to calculate it. All these calculations are automatically carried out of the computers because they are incredibly complicated, and their combination runs in crores. These miners require high computers with very high processing power. Once the equation is solved, other computers within the network confirm, and this transaction is added to the chain. A block of transactions gets created. Moreover hence, the technology is called

'block-chain.' The miners, in return, get Bitcoin. This system is called 'Proof of Work. The miners have to prove the communication work they do to get awarded the Bitcoins in return.

What happens to Bitcoin after all 21 Million are mined?

Bitcoins are more like digital gold. Like gold has to be extracted from physical earth, Bitcoin can are mined through a computer.

Bitcoins have a limited and finite supply. There will be only 21 million Bitcoins on earth. After all, Bitcoins are mined, the planet's supply will be tapped out. As of 24th February 2021, 18.638 million Bitcoins have been mined, which leaves 2.362 million yet to be introduced into circulation. Once all Bitcoin has been mined, the miners will still be incentivized to process transactions with fees.

"BITCOIN PIZZA DAY"

22nd May 2018 marks the date the first-ever transaction happened using Bitcoins. A programmer from Florida, Laszlo Hanyecz, paid for two pizzas using Bitcoins. The day has become part of tradition not because of the transaction but for the price. The man had paid 10,000 Bitcoins for two pizzas.

Thanks to record breaking price of $60,000 (10th April, 2021), Hanyecz's stash would now be worth $613 million (or £440 million).

The day is known as "Bitcoin Pizza Day" and is the most celebrated date in the crypto calendar.

Password and Biometric Security in Finance

- Tarique Ahmad TE Comp C

As the world becomes more digitized, our financial security is increasingly at risk. Hackers can gain access to our bank accounts, credit card information, and other sensitive data with ease. This is why it's important to choose a biometric and password security system that is both secure and convenient.

There are a few things to consider when choosing a security system for your finances. First, you'll want to make sure that the system is compatible with your devices. Second, you'll want to choose a system that offers a variety of security features, such as two-factor authentication and biometric login. Finally, you'll want to consider the cost of the system and the level of customer support.

Two-factor authentication (2FA) is an additional layer of security that is used to verify a user's identity. 2FA is typically used in conjunction with a username and password. The two factors can be something that the user knows, like a PIN or a password, or something that the user has, like a fingerprint or a key.

2FA is a great way to add an extra layer of security to your online accounts. It's important to remember, however, that 2FA is not foolproof. Hackers can still gain access to your accounts if they have your username and password. They can also use social engineering to trick you into giving them your 2FA code.

Two-factor authentication disadvantages

There are a few disadvantages to using two-factor authentication. First, it can be inconvenient. You'll need to have your phone with you at all times in order to log in. Second, it can be expensive. If you lose your phone or it's stolen, you'll need to purchase a new one. Finally, two-factor authentication can be time-consuming. It can take a few seconds to receive a text or email with a code, and then you have to enter that code in order to log in.

That being said, 2FA is still a valuable security measure. It's important to choose a 2FA method that is convenient for you while still providing a high level of security.

Need for Biometric System

Passwords are inherently weak and easy to crack. They can also be difficult to remember,

which is why many people choose to use the same password for multiple accounts. This is a dangerous practice, as it only takes one compromised password to give a hacker access to all of your accounts. A better solution is to use a biometric security system. This type of system uses your unique physical characteristics, such as your fingerprint or iris, to verify your identity. This is much more difficult for a hacker to replicate, and it's also more convenient for you.

Biometric login is another excellent security feature. With this, you'll use your fingerprint, iris scan, or facial recognition to login to your accounts. This is a convenient way to keep your data secure, as you don't have to remember a password. Biometric security systems are becoming more popular as we become more reliant on digital devices. This type of security system uses physical characteristics, such as your fingerprint, iris scan, or facial recognition, to login to your accounts.

How Biometric is very beneficial and a trend in finance sector

There are many benefits of using biometrics for security. First, biometrics are unique to each individual. This means that it is much more difficult for hackers to gain access to your accounts using biometrics. Second, biometrics are more convenient than passwords. You don't have to remember a password, which can be difficult to do if you have multiple accounts. Finally, biometrics offer a higher level of security than passwords. Hackers can easily guess or brute force their way into your accounts if they have your password. However, it is much more difficult to guess or brute force your way into an account if you need to use your fingerprint, iris scan, or facial recognition to login. The trend of using biometrics for security is increasing. More and more businesses are using biometrics to login to their accounts. This is because biometrics offer a higher level of security than passwords.

When it comes to the cost of security systems, you'll want to consider both the initial investment and the monthly fees. Some systems are very expensive upfront, but offer free or low-cost monthly plans. Others are more affordable upfront, but charge higher monthly fees.

Finally, you'll want to consider the level of customer support offered by the security system provider. If you have questions or run into problems, you'll want to be able to reach customer support easily. Make sure to read reviews of the customer support before choosing a system. When it comes to protecting your finances, biometric and password security systems are your best bet. Choose a system that offers a variety of security features and is compatible with your devices. Consider the cost of the system and the level of customer support when making your decision.

Multiexperience in Finance

- Gurleen Pannu TE Comp B

According to Gartner (who coined the term "Multiexperience" in late 2019), by 2023, "more than 25% of big business mobile apps, progressive web apps, and conversational apps will be produced and/or operate through a Multiexperience development platform." Multiexperience is all about adapting to the growing market of multiple devices and their distinct experiences. Every engagement, from initial inquiry through conversion, including customer onboarding, contractual and agreement signing, customer support interactions, upsells and cross-sells, and multichannel marketing efforts, must be covered by multiexperience.

Applications must now function on a variety of platforms and change quickly, all while maintaining a consistent business experience. Rather than just adapting or transferring over, multiexperience design aims to respond to the unique experience of each device, stream, or channel. It aims to create a seamless experience across all channels and devices. It focuses on developing solutions that shift smoothly from smartphones and laptops to wearables and even voice-activated devices. Whatever device or platform you're using, you should get a seamless, native experience. That's what the Multiexperience is all about. We don't have to search far for a fantastic example of Multiexperience than the banking industry.

To say the least, 2020 was a turbulent year for both people and businesses. The worldwide COVID-19 epidemic has thrown our lives into disarray in ways we could never have predicted or anticipated. While certain businesses have suffered (such as restaurants, amusement parks, and movie theatres), many others have prospered. Digital banking, financial services, streaming video services, EdTech, and online delivery are just a few of the areas that are expected to grow in popularity by 2020.

Traditionally, the sector has been a primarily brick-and-mortar business, but with the dawn of the internet, businesses have been pushed to offer online banking and account management services. Now? They're accomplishing a great deal more. Fast forward to the present, and practically every bank has implemented mobile applications and increased digital connection. Users may pay bills via a chatbot, voice-activated ATMs, smartwatches, cellphones, and the bank's website, among other options. Companies must also examine their branding and style, as well as what customers anticipate from their organization and its offerings. Your user experience should be consistent so that users don't have to relearn how to navigate from one device to the next — everything should seem instantly familiar.

The mobile device is at the heart of the business concept in the great majority of situations. This is a critical truth in many industries, including banking: individuals no longer need to go to a physical location in the great majority of cases since their mobile device provides them with all the information and services they require. Modern gadgets also have geo-location targeting, cameras, and other sensors, enabling a broad range of flexible options.

The wearables industry is continually expanding, with analysts predicting a high of over 560 million devices in 2021. That's a lot

of gadgets with which your business might not be actively engaged. Wearables, on the other hand, have a number of challenges, including limited display area and frequently basic controls. A smartwatch, for example, may only show a limited amount of information at any given moment, and controls must be kept to a minimum. Wearables, on the other hand, have a significant advantage in terms of interconnection. Smartwatches, for example, link to a smartphone and share many of the same capabilities, essentially functioning as a mobile app or solution extension. Some gadgets are even supporting SIM cards for data roaming on their own. The smartwatch is now the most popular wearable gadget, accounting for around 30% of all purchased wearables. However, as audio gadgets and perhaps smart glasses become more widespread, experts predict this category to fracture even further. So, what are the possibilities with wearables? How about informing individuals when their bank balance changes, so they can see if the money went through or was properly received?

When it comes to interaction and interfacing, smart hubs might be the most transformative. There are no physical controllers or displays. Everything is controlled by speech. Traditional software clearly does not function in this situation. Companies may, however, allow users to use spoken instructions to ask inquiries, obtain important information, and even place orders. Although this is still a new sector that relies on natural learning processing and other machine learning sectors to function properly, the appearance of numerous hubs in the average house cannot be overlooked.

The key advantage of third-party solutions is that they've already been constructed — the technology and audience are already in place. The disadvantage is that you are limited in your options since you must utilise their API or construct solutions using compatible and supportable methods. However, considering the advantages, this is scarcely a disadvantage in the great majority of situations.

Financial services firms may use the multiexperience strategy to:

Provide consumers with multistep self-service choices across channels.

Customers should be able to obtain individualised replies according to their requirements and preferences on every device they use, whether it's a desktop computer, a laptop, a smartphone, or a tablet.

Reduce expenses through lowering contact centre resources and enhancing per-call efficiency, as well as by automating routine processes;

Reduce client wait times by offering multichannel self-service alternatives.

Increase client satisfaction and loyalty by meeting demands on time across all platforms.

Provide seamless, personalised experiences that are tailored to each individual's preferences and preferred channel or option to increase brand equity.

Companies may develop a multidimensional client experience by knowing their life stage and how their financial demands vary as their personal and professional lives change using a multiexperience approach.

For banks, financial institutions, and insurance businesses, the face-to-face engagement that works effectively in physical offices must be preserved online. This is seen as a significant issue for them. As a result, a complete adjustment to incorporate practices is required to maintain that personal connection with clients. Customers should expect a significant shift in the financial industry in the near future, and they should be prepared for it. Users want greater and more instant access to the firms they rely on as technology grows more diversified and interwoven into daily life. These new expectations must be addressed, whether you're a digitally native eCommerce or a traditional bank, and a seamless roll-out helps guarantee you're ahead of the curve.

Decentralized Finance

- Shrinjay Kaushik TE Comp B

This past decade has been a rollercoaster for the financial sector of the country. Be it the 'Notebandi' or the lockdown period, the people of India have realized the necessity of a digital currency. One could say this was the first step in the maturation of the Fintech industry as we know it today. Companies swooped in on the market and capitalized on the need of the people for a mode of cashless payment method. One of the biggest industries that grew into a billion-dollar fintech industry is 'BharatPe'. Such companies provided the people with a digital wallet in which they could store their money and make payments without having to carry cash on them. This proved to be quite beneficial to a lot of people and hence they were quick to embrace such a change in their lifestyle.

Despite the availability of such 'wallets' there were a few people who did not completely trust digital currencies. For such people, a new technology was incorporated with the financial sector. A technology that catered to the security needs of the people, Blockchain. Blockchain was the technology initially developed as means to conduct trade between two parties without the need of an intermediary third party. Instead the safety features of blockchain proved to be extremely beneficial in creating a currency for people that was safe and gained the trust of the people. Bitcoin is one such example of a digital currency created using Blockchain. Bitcoin is probably the reason why most people know what blockchain is. However, Bitcoin as a currency relies on its vibrant community and underlying blockchain capabilities to keep growing and attracting users. Such currencies are often referred to as Decentralized Finance, or DeFi. At the beginning of 2020, the total value locked into the Decentralized Finance market reached approximately $680 million. As of today, the DeFi market is worth $6.68 billion, which, in just 2020, means that the market has grown with around 982%.

Several sectors are going to be affected by the decentralization of the financial system such as; Lending, Decentralized Exchanges, Asset Management, Financial Data, and Insurance. Three of the top five DeFi projects fall under the lending category, and together they make up more than half of the current market cap. The biggest of them being Maker which locks in $1.46 billion. Thanks to the Ethereum blockchain and the smart contract that are available, it is possible to construct secure and transparent protocols for lending and borrowing funds. Decentralized exchanges, or DEXes, are one of the most exciting innovations in DeFi. As the name suggests, DEXes are decentralized exchanges. This means that there is not a central authority in the process at all. Instead, people can make transactions through a Peer-to-Peer system and trade directly with each other. In asset management, DeFi also plays a significant role. Decentralized Finance will allow people to own an asset without anyone else having custody. For example, when buying a stock, you get ownership of the stock, but a bank still holds the asset.

Despite such a promising future, banks are majorly responsible for handling and carrying out a lot of financial tasks by acting as a intermediary. This is solely because DeFi is a rela-

tively new addition to society and with it still being in its early stages, there is a need for a well-established system that can ensure that all the transactions are smoothly carried out. Another one of the problems for DeFi is the fact that it might be hard to grasp for the average person. It is a bit abstract, but this is something that companies are working on. The idea of creating systems that will clarify and visually demonstrate how this is working in the real world was something that was discussed at the DeFi Conference 2020. To be able to explain and show people how Decentralized Finance works is one of the key aspects for more growth since it will mean that people can start mass adopting the concept of a decentralized financial system.

The Beauty of cryptocurrency & Blockchain Technology

- Pawan Jha, Aman Jaiswar, Anand Jaiswar, SE COMP A

Cryptocurrencies, for example, Bitcoin, have grown closely associated with technology and radicals. It is considered a digital currency by reputed banks.

Cryptocurrencies exist only digitally and can exchange between digital addresses. This article discusses the blockchain system and its application in various fields. It also contains a brief history of blockchain before discussing the future of the technology and is used to solve problems in different sectors. Blockchain is a public book for all cryptocurrency transactions digitized and distributed internationally.

Originally named as a way to allow cryptocurrency-Bitcoin to become unreliable, the blockchain has freed itself from its original goal as a growing number of industry and technology stakeholders as an attractive way to solve existing business solutions and disrupt mature industries. This article introduces a systematic review of blockchain technology, tracking its growing popularity with similar technologies, such as cryptocurrencies and Bitcoin. The most beneficial aspect of blockchain is that it allows digitized, non-falsifiable data to spread across all applications or decentralized environments. It allows for more accuracy and transparency than traditional systems. It does

not require a central database that can be tampered with. It provides an ideal solution for transactions where transparency and security are needed to maintain trust. In this way, the blockchain could function much like a ledger, allowing both parties in the transaction to have complete visibility over the process while also ensuring that both parties have recorded all information exactly as it occurred.

Blockchain offers many different capabilities in discrete industries or sectors.

Cryptocurrencies are based on complex technology such as blockchain and cryptography.

While these technologies are likely to develop, it is hard to predict the direction of their future growth. The following are some technological factors that may have a bearing on the future scope of cryptocurrencies by 2025.

The coding language used in blockchain technology might evolve: Blockchain uses a term called Solidity to code smart contracts. While this language is widely in use and has become standardized, it will be interesting to see what new coding languages emerge with time. It is also worth noting that the coding language

can determine how easily an average user can succeed in writing programming codes for different applications using blockchain technology.

The technology to mine virtual currencies may advance. While cryptocurrencies are purely hypothetical, it will be interesting to see what new technological advancements can be made. That will enable miners to solve complex mathematical problems to mine these cryptocurrencies. For instance, if a sophisticated algorithm is developed that can effectively utilize the computing power of a personal computer, then this will make it possible for anyone with access to a personal computer to become an amateur miner.

Another way by which this advancement in technology can take place is by using cloud-based computing. This would necessitate the use of cloud-based servers for mining tasks.

A blockchain is a block separated from all activities in a peer-to-peer network. By using this technology, participants can ensure transactions without the need for a central cleaning authority. Applications include money transfers, bargaining, voting, etc. It has become a hot topic in the global financial system. It has volatility in exchange rates. With this, there is a high risk of trading these cryptocurrencies. Their growth has been able to attract the attention of many speculators. Bitcoin is the first successful launch of the blockchain. Today, the world has found the use of blockchain technology in several industries, where trust without the involvement of central authority is desired.

How Fintech is Changing the Stock Market

- Dheeraj Jain BE Comp A

Fintech has brought remarkable innovation in the field to the forefront as an expanding segment for tech-based enterprises. Smarter enterprises and newer startups, on the other hand, are migrating to virtual methods of money management and transactions in order to double their revenues and progress. It has transformed the financial sector from banking to investments, and it is currently playing a key role in transforming the way investors partake in stock markets. Some apps provide free basic stock trading, real-time, relevant, tailored financial news, and a platform for users to acquire stocks easily, among other things. Fintech has unquestionably democratized the stock market.

Fintech has changed the status quo in the stock market, where information is king, by making market insights and rich data available to everyone owing to technological scaling. Previously, retail investors had to either subscribe to a stock research firm or pay a stockbroker to keep up with the newest trends or obtain the necessary data, both of which fintech has effectively disrupted. Retail investors can use fintech to select algorithm-based services that can generate better market predictions and plan decision-making to maximise their returns on investments. Investors used to have to spend months examining data to make a good investment decision just a few years ago. The use of big data analytics, AI, and machine learning technologies have streamlined the process and provided investors with relevant data in seconds since the introduction of such solutions. At the same time, investors can use free investor education platforms to learn about the ins and outs of the stock market in an entertaining way. Previously, only a few investors had access to algorithmic trading and advanced charts. The accessibility of such advanced services has been enhanced because of fintech brokers' API-based approach.

Furthermore, while on the go, an investor receives stock suggestions and insights. They may now take advantage of new changes or withdraw from relevant ones while on the go thanks to app-based trading. Everything has been merged into one simple interface using the new fintech-based approach. Users may invest faster, more easily, and more cost-effectively with this streamlined method. Machine learning (ML), chatbots, and artificial intelligence (AI) are used in fintech to construct automated advisers who can analyze vast volumes of data and provide tailored investment recommendations. Users may get instant answers to queries such as how much to invest, how to diversify their investments, and what is the best portfolio for a specific investor. The investment pays off because the technology assists with asset allocation and rebalancing services, among other things. Fintech-based brokers are now employing AI and machine learning across the board, including customer onboarding, allowing anyone to begin trading in less than five minutes.

Intelligent investors will be able to play a fair game on a level playing field thanks to these new technical ways that provide data independence. Developers and programmers are likely to improve on existing tech solutions, allowing for even more convenient access to data and the stock market in general.

AI IN FINTECH

- Mitali Mandge AI&DS

Ever had trouble maintaining physical money? Ever lost track of your expenses? Recent times have come up with an efficient solution for the same, with online payment options that has made transaction of money much easier. Paytm, GPay and Venmo are examples of the same. Fintech has been used in the newest of technologies nowadays that has opened doors to a lot of new opportunities. Fintech has helped enterprises – mostly start-ups – disrupt the sector and provide better financial services to businesses and consumers by combining the latest technical breakthroughs with financial services or applications. Fintech has created a lot of hype in the technological world, but what exactly is Fintech?

Fintech, short for Financial Technology, is the digitization of financial services normally provided by banks, credit card companies, credit unions, investment banking and other businesses within the finance industry. Fintech, at its most basic level, is used to help businesses, entrepreneurs, and consumers better improve their financial operations, procedures, and lives by applying specialised machine learning and artificial intelligence algorithms that are run on machines and, increasingly, smartphones. Day by day, there are more and more emerging financial technologies providing alternatives to traditional financial methods and financial services, further democratising and segmenting the financial sector.

The Fintech sector is no stranger to the technical dominant power in play, Artificial Intelligence. Just like in every other sector, be it agritech or hospitality, AI has made a strong foothold in the FinTech sector as well, owing to its enormously wide range of applications. Artificial intelligence (AI) technologies like machine learning, data analytics, neural networks, and others can dramatically improve financial technology. In fact, AI is becoming increasingly important in the financial services industry. In all sectors of FinTech, it is driving new efficiencies and sustaining competitive advantages. In terms of gathering data, analysing information, securing and enabling transactions, generating customer-centric products, and streamlining procedures, AI is becoming a crucial aspect of the fintech field.

Having talked about how AI has helped increase the efficiency of the Fintech sector, let us now talk about the advantages of using AI in FinTech. Bias comes naturally to us. They may use data selectively or make intuitive judgments about other individuals based on their age, gender, or race. AI will, in most situations, be less biassed than humans. That doesn't rule out the possibility of AI becoming entirely objective. When a machine learning algorithm is taught on systematically biassed data, it will generate biassed decisions. Organizations will need to stay current in order to recognise how AI can promote fairness and where ML and human intelligence can work together to decrease bias. This might be especially useful in areas like loan servicing and assessing an appropriate credit level without the usage of humans.

By utilizing AI to comprehend the client better, exploiting constant independent direction and prescient investigation, client commitment

can be moved along. Utilizing item proposal motors, for instance, has demonstrated viable at conveying a customized insight and driving up income. Item proposal motors are an exceptional use of AI intended to give ideas to every client in view of various elements, including past way of behaving, in-meeting conduct, item financial aspects, and the ways of behaving and inclinations of comparative clients.

These are only a few of the variety of benefits AI offers in any field, namely Fintech for our chosen field of discussion. AI is steadily changing the face of the world for the better and soon the world will be nothing like we now know it to be.

DIGITAL PAYMENTS

- Viraj Zaveri AI&DS

Digital payments (mainly made possible by mobile devices) have great potential to change the lives of millions of people in developing countries by providing financial services to the masses without banks. Despite these possibilities, digital payment methods have not been widely adopted and have not been successfully adopted in developing countries. In recent years, the Internet has changed the way we do business related to wireless communication. This new trend is stronger than what the Internet has ever offered to make the paradigm accessible to consumers anytime, anywhere. No other innovation in human history has influenced people's lives like mobile devices. These handheld devices are gradually shifting everyday activities from real-world situations to mobile-based virtual worlds. Mobile phone adoption has been the fastest and deepest in the entire history of consumer technology adoption. With the worldwide spread and use of mobile devices, digital payments occupy a prominent position in the payment market. The proliferation of this mobile device offers a world of opportunities to transform the way people manage and move money through secure mobile transactions.

Despite its popularity as an emerging service, mobile payments are not as widespread as expected in developing countries. This may be due to the fact that mobile payment systems in developed countries must compete with a variety of alternative payment methods that have a long history. With this in mind, there is no doubt that mobile payments have the potential to drive financial inclusion, especially in emerging markets, by providing financial services to the masses without banks and making their lives better. Recently, the Government of India (GoI) has made great strides in promoting various digital payment systems, including mobile payments, to increase transparency in financial transactions, ease tax requirements and improve public welfare and delivery systems. GoI has not only made various digital payment systems available to meet the needs of all segments, extensive training and financial incentives are also provided to equip and encourage people to use these systems. Despite the benefits of digital payment systems and widespread advertising, consumers are reluctant to use a variety of digital payment systems, including mobile payments, not only in India but also in other countries.

Over the last two decades, electronic payment systems (EPS) have received a lot of attention from researchers and information system developers because of their important role in modern electronic commerce. This has led to extensive and thorough research, with different perspectives on the definition of electronic payments in particular. These definitions have been viewed primarily from a variety of perspectives, from accounting, finance, and business technology scholars to information systems scholars. In short, an electronic payment system can easily be defined as a collection of components and processes that enable more than one.

More parties are trading and exchanging monetary value via electronic means. There are four main categories of electronic payment systems: online credit card payments, electronic

cash, electronic checks, and checks. They also emphasized that each of these systems has its strengths and weaknesses. They also emphasized that each type can be evaluated according to these four different qualities: technical, economic, social, institutional, and legal aspects. One of the results of this survey is that most of the surveys on payment acceptance were conducted in developing countries, especially African countries. Second, the banking sector is at the forefront of research on the adoption of electronic payments, with a significant number of previous studies using bank customers and employees as respondents.

Additional researchers expand the scope to cover other aspects of previous research, for example by analyzing the variables used. This may provide space for analysis and integration of variables used to find existing gaps for further empirical research on the adoption of electronic payments.

Faculty Articles

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NEOBANK

- Dr. Manish Rana Assistant Prof.
Mr. Swapnil B.Wani Assistant. Prof.
Department of Computer Engineering TCET

Now a days Neobanking has become a buzzword in the fintech community and most popular online platform

What is Neobank?

A neobank is a bank with no license of their own And it is a bank without any branches. Really, it is an online platform for digital banking that provides financial solution such as money transfer, money lending, and more Neobanks don't have a bank with no license of their own On the financial landscape There is gap between traditional bank offers and the customer requirement that gap can be fulfill by Neo Bank

Why neobank?

Because of the above reason neo bank is popular but there is another reason that was pandemic. During pandemic year Customers are moving away from physical banks and physical cash, and more towards online banking and wallets. More and more people are getting comfortable making online payments through Google Pay, Paytm, PhonePe, and more If we think about these numbers, we can see the potential neobanks have in the country. Neobanks provide the fluidity that traditional banks don't. They can easily sustain themselves and turn out to be profitable.

Working of Neobank

Neobank has different business model altogether. nonbanks do make money marginally between money inflow and lending. And, since there isn't a physical location and that they're completely online, the customer fees are slashed by a significant amount.

benefits of nonbanking?

free account creation

Any customer can create an account within a few steps by using mobile phone

Seamless international payments

In abroad neobank Customer can do payment by using card with current exchange rates. This is not possible by using traditional bank card which required permission

User-friendly interface

Neobanks are all about providing an excellent user interface

Give transaction details immediately

Transactions made via neobanks are immediate. The transaction details are populated instantly providing you with an up-to-date balance on your account, at all times. All of your transactions and payments appear on your app and, you don't have to go anywhere else for this information.

The neo-app also provides you with an overview of your expenses, along with a savings goal which can be customized to best suit your needs. This helps you manage your finances in a much better and informed manner.

Online Fraud in business

- Ms. Veena Kulkarni Assistant Prof.

Ms Pranjali Sankhe Assistant Prof.
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Nowadays Online fraud is one of the greatest challenges that businesses face in the digital space. In 2020, a PwC survey of more than 5,000 companies found that 47% had encountered fraud attempts in the last 24 months, with known fraud losses totaling $42 billion. A global study of more than 2,500 fraud cases from the Association of Certified Fraud Examiners found that businesses suffered median damages of $125,000 per case in 2020, with 25% losing upward of $600,000.

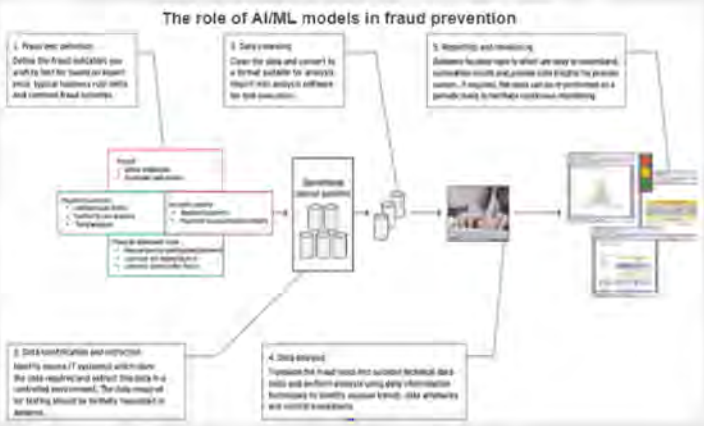
So, FIs have traditionally used rules-based systems along with manual suggestions for fraud detection. Fraudsters' growing rapidly and the difficulty of creating rules for every inconsistent transaction problem arises with False positives the flagging of legitimate customers as fraudulent and fraud going undetected due to high data volumes and facing difficult problems plaguing rules-based systems. AI and ML, on the other hand, lean on the much more effective principle of detecting deviations from standard activity.

ML specializes in spotting outliers in large data sets and in "learning" and adapting to new patterns of input. Banks can deploy the technology for both supervised and unsupervised learning, which can

often support or reinforce their fraud-prevention efforts in different ways. Supervised learning enables FIs to receive real-time insight into their fraud analytics, helping them better tailor their solutions to eliminate false positives based on fraud investigators' experiences. Unsupervised learning, meanwhile, allows banks to harness ML to root out potential fraud scenarios that are not outlined within the existing analytical framework.

AI and ML systems thus excel at fraud prevention because they can identify trends in savvy cybercriminals' constantly evolving approaches, as they are increasingly using AI themselves. This explains why more industry players, governments, and auditors alike are adopting AI and ML for fraud prevention in place of their old rules-based systems.

How AI/ML models help fraud prevention



Benefits and Barriers to AI and ML Adoption are useful in

Major payments players such as American Express and Visa have deployed highly advanced AI-based systems for fraud monitoring and credit risk and continue to invest in their AI programs. Synchrony has achieved an over 90% accuracy rate with its AI anti-fraud ecosystem as well. A PAYMNTS study polled FIs in the U.S. about their use of AI and other advanced technologies, and the results confirm rapid growth in AI system adoption,

which roughly tripled between 2018 and 2021, from 5.5% to 16% of respondents. This aligns with broader industry trends and, while still low, suggests that most firms could be using AI solutions within a few years.

The FIs surveyed that had already adopted AI identified benefits either directly or indirectly related to fraud monitoring and prevention.

Credit Card Fraud Detection using Machine Learning

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Companies want to give more and more facilities to their customers. One of these facilities is the online mode of buying goods. The customers now can buy the required goods online but this is also an opportunity for criminals to do frauds. The criminals can theft the information of any cardholder and use it for online purchases until the cardholder contacts the bank to block the card. The internet is the great invention of the modern times. The users of the internet are increasing day by day. The business organizations or companies also started their business through this online medium .These business companies are providing the facility of online buying to their customers. Customers can buy the required products through the website or ecommerce stores of these companies. Most customers use credit card for buying things online. In this way, some of the customers can be the thief who has stolen the card of a person to make the online transactions. This is considered as the credit card fraud that must be detected. This fraud can also be in the form of any purchase by using the credit card in an unauthorized way. The cases of this kind of fraud are increasing. It is necessary to solve this challenging issue.

Artificial intelligence is saving the time of humans in different fields. Especially machine learning, which is the branch of artificial intelligence is very helpful in performing the complex and difficult tasks. Many researchers used this sub field of artificial intelligence as a solution to various problems. It is necessary to handle the credit card fraud problem through the machine learning because this cannot be done by a human being in a proper way. Online customers are increasing day by day. The customers now want to purchase the goods by sitting at their homes because of different reasons. For example, purchasing goods online saves the time of the customers. The increasing number of online customers makes credit card fraud, a more challenging and important problem. Customer prefers to use credit card while purchasing the goods because of different benefits like cash back, discount. The fraudulent transactions are performed in a way that looks like the original transactions and these transactions cannot be detected by the traditional pattern matching techniques. This is a problem that cannot be compromised because with the passage of time the number of frauds are increasing. One percent of the online transactions are the fraud transactions . It is necessary to have an efficient mechanism that can be used to deal with this problem. Every day, new and new researches are performed by the researchers in the different fields.

Many researchers of finance field considered this problem as a challenging and important problem. The use of machine learning is proposed by the researchers to deal with this problem. Researchers trained the algorithms of machine learning with different kinds of data set. Researchers used the different machine learning (ML) algorithms for the CCF detection. Researchers said the different ecommerce websites are offering the online payment modes and it is also increasing the number of online frauds. They applied the various ML algorithms and random forest detected frauds with more accuracy.

Researchers discussed the various kinds of frauds and fraud detection created a system that is based on neural network. This system is helpful for detecting the CCF. In this digital world, it is very important for the finance sector to detect the frauds that are connected with the credit card. Researchers said the machine learning can be helpful to resolve this issue. They applied the two different machine learning algorithms for this purpose. These are the Bayesian network and neural network. Through the results they proved that the Bayesian network can detect the fraud in a faster way than the neural network. SVM based approach is used by researchers for detecting the CCFs. The understanding about the credit card frauds and its prevention techniques is necessary to stop this fraud.

Role of Data Analytics in Fintech

- Ms. Anam Khan Assistant Professor
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Fintech, is a suitcase of "financial technology", and is the application of new technological advancements to products and services in the financial industry. It refers to any business that uses technology to enhance or automate financial services and processes. Fintech serves the interest of both consumers and businesses in multiple ways, from mobile banking and insurance to crypto currency and investment apps. It has a seemingly endless array of applications.

Fintech businesses that concentrate on big data analytics may integrate data from variety of sources to ensure that no stone is left unturned. Fintechs can operate with more financial certainty, manage income, and provides consumers competitive rates because of improved risk assessments.

Big data allows you to understand customers now better than ever. The amount of knowledge generated by MasterCard transactions, ATM withdrawals, credit scores, and other financial tools is staggering. Using this trove of data, Fintech businesses have a deeper insight into their customer's needs.

The "Tech" in Fintech is Evolving Continously

The fintech industry is evolving on a rapid phase. It is continuously changing the the customer experience and customer expectations for all financial institutions. Artificial intelligence, machine learning, and big data are allowing for a more personalized and customized experience for customers. Customer experience has become a differentiator and a prime constraint in evolving customer expectations. It has allowed fintech to siphon customers away from traditional financial providers. Industry observers point to this improved customer experience as one of the reasons for the rapid adoption of fintech companies and non-traditional financial institutions.

AI & DS is the keystone which has enabled the new generation of EcoFin(economic-financial) and Fintech. It is continuously reshaping and redefining the concepts, objectives, contents, and tasks of EcoFin and Fintech. Actually, it is transforming the way that modern economic and financial businesses operate, transact, interact and collaborate with consumers, markets, and regulators etc. Data science and AI does not only strengthen the efficiency, cost-effectiveness,

rencies out there, so it's worth considering which coins or tokens might be taken (right for you). No matter what, if you're a seasoned crypto investor or looking to take your first steps in this exciting world, learning is a great way to reduce risk and make an informed decision about your money.

Cryptocurrency And Blockchain

- Dr. Harshali Patil HOD
Ms. Huda Khan Assistant Prof.
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By now we might have heard cryptocurrency is decentralized digital money that is based on blockchain technology and secured by cryptography. Also, it is a digital payment system that doesn't rely on banks to verify transactions. It is enable anyone anywhere to send and receive payments. We also need to know how many types of cryptocurrency are there? It's not just Bitcoin and Binance Coin. there are thousands of cryptocurrencies in existence. In this article, we take a look at the top 3 (based on market capitalization) and give you some insight into this three cryptocurrency.

While many cryptocurrencies share a blockchain-based infrastructure, there are some differences between them. Generally, cryptocurrency can be into two distinct categories: coins and tokens.

Coins: A coin is any cryptocurrency that uses its independent blockchain. Bitcoin is considered a "coin" because it runs on its infrastructure. Same like, Ether is operated via the Ethereum blockchain.

Tokens: Same like coins, tokens are also digital assets that can be bought and sold. However, tokens are a non-native asset, meaning that they can use another blockchain's infrastructure.

Top 03 popular types of cryptocurrency and how they work

1. Bitcoin (BTC)

Bitcoin was the world's first cryptocurrency and best-known type of crypto. It functions on its blockchain, with transactions verified (in this new Bitcoins created, up to a fixed cap) by an army of decentralized miners. Bitcoin was the cryptocurrency with the largest market cap in JAN 2022, at US$896 billion.

2. Binance Coin (BNB)

Binance Coin is the world's largest cryptocurrency exchange as of 2021. Transaction fees for this exchange are reduced for users who choose to pay via BNB. This has motivated the adoption of the Binance Coin, making it one of the largest crypto coins in the market. Binance destroys or "burns" a fixed percentage of the coins in circulation. To ensure its value remains stable.

3. Ether (ETH)

Ether is the cryptocurrency that runs on its own Ethereum blockchain. Like Bitcoin, Ether operates on its own blockchain, Ether is uncapped, meaning that an infinite number of coins can theoretically be created. Ethereum supports smart contracts, which are programs that run on the Ethereum blockchain and are executed automatically when certain conditions are met.

Other than the above three we also have Solana (SOL), Tether (USDT), XRP (XRP), Cardano (ADA), USD Coin (USDC), and Terra (LUNA), Avalanche (AVAX), etc. Each cryptocurrency has its Functioning and BlockChain Functions.

Consideration before buying cryptocurrency:

There are many different types of cryptocur-

customer experience, risk mitigation, regulation, and security of existing economic-financial systems, also it is innovating extraordinary, more intelligent, secure, and proactive products and services that form the new area of smart Fintech.

Secure Access Service Edge (SASE) New Way of Network Security

- Dr. Anand Khandare Associate Prof.
Mr. Swapnil Bhagat Assistant Prof.
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Background:

Few years back, no organization or industry had imagined that they have to adopt "Work From Home" culture and if someone imagined, it was just one hypothesis for them. But the COVID 19 pandemic turns the thing upside down. Before the pandemic organisations and industries were pretty much comfortable with the traditional work culture that forces employees to be present in the premises while working. So, the infrastructure and security were revolving around the premises only. Even if the organisations had outsourced their application or data outside the premises like public cloud, employees usually had to be in premises to access those resources. But long lockdown

and government restrictions forced organization to find new ways of working if they want to stay in business. Most of the organisation adopted the concept of "Work From Home". Eventually they realised the benefits of it. But it came along with some compromises like resources or data security.

When the organisation adopted "Work Form Home", they were broadly dependent on the virtual private network (VPN) for security of network, resources, and data. Employees used to login in VPN which allows them to connect to the organisation's infrastructure or resources from anywhere. But credentials breach of Fortinet VPN proved that it is not sufficient. Coincidentally just few months before the pandemic, one term is coined in the information security officer's discussion, i.e., Secure Access Service Edge (SASE). It was a combo pack of various network infrastructure and security technologies and tools which usually not seen together. It includes Software Defined WAN (SD-WAN), Zero Trust Network Access (ZTNA), Remote Browser Isolation (RBI), Firewall as a Service (FaaS-),secure web gateway (SWG) etc. Whereas VPN uses tunnelling and encryption for security of data while traveling through Internet, SASE ensure low latency, higher security, optimization, endpoint protection, monitoring, and many more.

SASE framework

Gartner defined the SASE framework as a cloud-based cyber security solution that offers "comprehensive WAN capabilities with comprehensive network security functions (such as SWG, CASB, FWaaS, and ZTNA) to support the dynamic secure access needs of digital enterprises." It provides both kind of service i.e., network infrastructure as well as network security. It has various benefits like reduced costs and complexity, Ease of Use, Improved Performance, Improved Security, Greater Agility, Enable Zero Trust Network Access, Increased Effectiveness of Staff, Centralize Policy with Local Enforcement etc.

SASE Applications:

SASE is powered by cloud computing technology means it require cloud computing based service. VPN connect to the resources and employees directly and encrypt all the data transmitting through it. But it does not provide additional security or access restriction to the resources. Any user could reach to any resource if additional restriction is not applied at infrastructure level. On other side, employees have to connect to the SASE either through the client software or other means provided by the organizations. The employee can use any service as per his/her need. For example, ZTNA is used to connect to the private applications which might be hosted on private data centre or public cloud. If user wants to access anything on Internet, he/she can use SWG which filters unwanted software/malware from user-initiated Web/Internet traffic and enforces corporate and regulatory policy compliance. If user require visibility and control in SaaS application, Cloud access security brokers (CASBs) is useful. RBI allows to access internet on remote browser rather than user's own browser which eliminate the risk of malware infection. These are some service examples that are provided by SASE.

Finally, we can say that, conceptually SASE is a technology which will improve the security of resources. But SASE is in its infancy state and research are still going on. Although some service providers are providing few or more services of SASE, there is still long way to go.

Advantages:

1. Reduced Cost

2. Network Scalability

3. Easy to use and manage

4. Simple security model

NFT :The New Craze

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Ms. Drashti Shrimal, Assistant Prof.
Department of Computer Engineering TCET

The past decade has witnessed many different unconventional modes of currencies and digital assets set to step into the financial world. With practically every miner and investor profiting from decentralized digital currencies such as bitcoin, there is a new player who has changed the digital asset industry. Non-fungible tokens (NFTs) have gained in popularity over the past year.

Cricketer Yuvraj Singh launched his NFT in collaboration with Colexion, a digital collectables website to share some of the best moments of his career with his fans. A hot-air balloon was launched from earth to orbit that carried Yuvraj Singh's iconic bat, which he used to register his first-ever century in the 2003 ODI match against Bangladesh in Dhaka. People have spent over $9 billion in NFT sales so far—and to hit $17.7 billion by the year's end!

What are NFTs?

Non-fungible tokens are digital assets underpinned by blockchain technology. It often symbolizes digital assets that link ownership to one-of-a-kinds digital or physical goods like real estate, music, artwork, or films. NFTs are commonly regarded as modern-day collectables. They are available for purchase and sale online, with digital evidence of ownership of any items included. When it comes to digital assets, one of the most common concerns is security. Similar to cryptocurrencies, NFTs are recorded on a blockchain that ensures the unique nature of the asset and checks for duplicity.

Why are they popular?

With the accelerated innovation in technology and adoption that has been observed, NFTs can potentially become the future of digital ownership. NFTs can expand to all types of possessions from digital forms such as artwork, collectables, and videos to physical forms including real estate. NFTs can be extremely lucrative for artists and musicians. With respect to artists, NFTs facilitate an easier and more rewarding method of selling art through royalty payments. NFTs also have a great potential to transform the music industry with exclusivity, royalty, and more.

In a nutshell

With the accelerated innovation in technology and adoption that has been observed, NFTs can potentially become the future of digital ownership. NFTs can expand to all types of possessions from digital forms such as artwork, collectables, and videos to physical forms including real estate. NFTs can be extremely lucrative for artists and musicians. With respect to artists, NFTs facilitate an easier and more rewarding method of selling art through royalty payments. NFTs also have a great potential to transform the music industry with exclusivity, royalty, and more. Most NFTs are created and stored on the Ethereum network. NFT ownership can be traced and verified while the owner of the token can continue to remain pseudonymous. An NFT can only has one owner at a time. Ownership is managed through the unique ID and metadata that no other token can replicate.

Future of AI & DS

- Ms. Neha Surti, Assistant Prof.
Ms. Bhakti Jadhav, Assistant Prof.
Department Of AI & DS

Data Science Future is the new normal. In the 21st century, all businesses and Industries realize the importance of data. Data will never end and because of that the term Data Science is increasing day by day. Nowadays there is increasing demand in Data Science of all sizes to make decisions, analyze market trends, reduce losses and increase profit. But what will be the future of Data Science? Is there any growth? Yes, of course, after15-20 years there will be a tremendous change in Data Science Industry.

Data Science and Artificial Intelligence are amongst the hottest fields of the 21st century. At present, various sectors are using Data Science for their growth and benefits. But, Advancement in machine learning algorithms is an important aspect of the future of data science. Challenge for Data Scientist in future will have areas like critical business and several complex challenges. Day by day Data Scientist demand will be increased as the use of Artificial Intelligence (AI) increases. Data Science will bring a lot of opportunities in almost every sector such as Financial, Manufacturing, Entertainment, Agricultural, Healthcare etc.

Automation of several tasks is one of the key future goals of the Industry. Data Science will have a bright future and will last longer for decades. We are moving the mobile world into the AI world. AI-powered humanoid robots capable of working on any terrain will help and save people in natural calamities such as earthquakes and floods. These robots will be able to deliver food and emergency services. In the next 15-20 years the technology will become capable enough to bring automated cars into use. Other transportation methods such as buses and trains may also come close to full automation. It is possible that machines, robots, AI and AI enable robots will replace humans in certain types of jobs. Also, in future, technology will build automated weapons. Data Science can also help in building various automated solutions to identify any attack in a very early stage helping to stop the cause.

There are a few aspects which need to be looked after in order to avoid the failure of Data Science and AI projects. The significance of data to solve any kind of AI or Data Science project is paramount. The critical point is to ensure that the data meets the requirement and there are sufficient amounts to create the desired projects. It is crucial to understand the objectives to achieve through the step-wise procedure being followed. Losing motivation midway is a major issue while trying the hardest to fix the errors and obtain an optimal solution. Dealing with resource constraints is a big concern. Effective collaborative teamwork is significant because there needs to be a consistent exchange of information on the ongoing project. Adapting and optimising with the new emerging technologies that arrive in the world of Artificial Intelligence is a major requirement.

There is high demand for Data Science and Artificial Intelligence in the future but it has challenges which need to be looked after as opportunities to grow in the various domains.

COMPENDIUM

The transition from an offline to an online world has been a heated topic of debate in India and throughout the world since the pandemic began in 2020. While many industries had previously adopted a hybrid approach, it caught many businesses and individuals off guard, particularly those who were highly reliant on the offline manner of operation, such as the finance industry. We chose "FinTech - The Heart of Modern Era Finance" as the theme for this year's Nimbus to recognise the advancements in the field of FinTech over the last few years, transitioning from a completely offline banking system to one where most, if not all, banking features are available on the go on everyone's mobile devices. You'll find a number of intriguing essays on this topic written by students and staff from the Computer Engineering department throughout the magazine. This publication is sure to have you thinking about the ideas, with a variety of viewpoints and responses.

The main concern was whether everyone had found a new normal and if forced alterations could withstand long-standing patterns and processes. In the previous year, digital learning was a major theme, signalling a significant shift in traditional learning methods. Despite the panic and worry caused by the pandemic, technology has frequently demonstrated its use in restoring global normalcy. Nimbus explains what it means in today's world and how it has aided us in overcoming difficulties. The age we are living in will be remembered for a long time, and we must remember to pass on our lessons to future generations. Nimbus looked at not just how to respond to a global pandemic, but also what lessons we may teach future generations.

Interview

INTERVIEW

- Iqbal Kaur,
Vice President, Data Sciences
Terminus

Q.1)How did you make the transition from an MBA in Finance and Marketing to a profession in analytics?

A: I've always excelled in logical reasoning and data analysis. During my MBA, I was exposed to programming and saw how rational programming languages are. In addition, previous to analytics, all of my jobs needed me to evaluate data in order to make business choices. So, when I had the chance to expand out into a data scientist job early in my career, it was a simple adjustment for me to make, and I thoroughly liked acquiring the new skill set.

Q.2) Could you explain what Zylotech does, as the co-founder of the company?

A: Zylotech is a self-learning customer intelligence platform that maintains and enriches our clients' customer data for 1:1 personalisation and revenue acceleration. Our trusted customer intelligence automates the bottom-up flow of identification, intent, and insights while keeping the data clean and usable, resulting in a massive income boost.

Q.3) What is the difference between predictive analytics and customer success?

A: Predictive analytics finds the elements that drive diverse outcomes and unlocks the value buried in the consumer data acquired by a firm. The Customer Success team's productivity and efficiency may be greatly improved by having a more accurate predictor of customer behaviour. Fewer "false alarms" and more timely notifications for problems that might result in lost company or customers are the outcomes of more accurate predictions. As a result of using predictive analytics, Customer Success teams are able to devote more time to areas where they may have a positive influence on the company's growth.

Because of developments in machine learning, predictive analytics is now dynamic, which means it can automatically respond to changes in overall customer behaviour. Customers may behave differently when a product offers to alter, the client base evolves, or the macroeconomic situation shifts.

Predictive analytics is a strong technology that is increasingly gaining traction in sales and marketing platforms. Machine learning-based predictive analytics solutions enable firms to operationalize the output by incorporating it into business processes where it may deliver considerable

Q.4) How should students academically qualify themselves?

A: A few breakthroughs have had a substantial influence on analytics positions and capabilities throughout the years. One is a strong emphasis on making analytics more accessible to the general public through simple user experiences. Two, processing power has risen a trillionfold, and three, we now store data in zettabytes.

These shifts suggest that on one, more engineers are always developing to make technology cheaper, smarter, and quicker so that we can store and analyse massive amounts of data at lightning speed. On the other hand, designers are attempting to make the entire experience of utilising this output simple and intuitive, which necessitates extensive subject knowledge.

As a result, I believe we will see two types of talent succeeding in the analytics world: individuals with exceptional programming and technical abilities who can create analytics languages and algorithms, and people with deep business domain understanding who can create clever user-interface solutions.

This indicates that students should pursue STEM disciplines in high school and university.

INTERVIEW

- Belal Rashid,
Manager at Meem Credit Card,
Saudi Arabia

Q.1) What exactly is FInTech in your terms and what it comprises of?

A: Fintech is a broad term that covers a wide range of activities, but at its core, fintech is about using technology to provide better and more efficient financial services. This can include anything from developing new financial products to using data and analytics to provide better insights into financial markets.

Q.2) How is FinTech different from traditional financial services?

A: Fintech is different from traditional financial services in a few key ways. First, fintech companies are usually much more nimble and agile than traditional financial institutions. This allows them to quickly develop and deploy new technologies and products. Additionally, fintech companies are often more focused on the customer experience than traditional financial institutions. This means that they are constantly looking for ways to make the financial services experience more seamless and convenient for customers.

Q.3) What are your thoughts on the role of FinTech in the financial industry?

A: I think FinTech definitely has a role to play in the financial industry because it provides new and innovative ways to manage money and financial transactions. I think FinTech definitely has a role to play in the financial industry because it provides new and innovative ways to manage money and financial transactions.

Q.4) What do you think is the most important aspect of FinTech?

A: I think the most important aspect of FinTech is its ability to provide new and innovative solutions to financial problems. For example, mobile banking apps can help us keep track of our finances and make payments on the go. I think the most important aspect of FinTech is its ability to provide new and innovative solutions to financial problems.

Q.5) What are some of the most exciting developments in FinTech that you've seen recently?

A: Some of the most exciting developments in FinTech that I've seen recently include the rise of mobile banking apps and the development of new payment technologies. I think mobile banking apps are a great way to keep track of your finances and make payments on the go. And, new payment technologies like blockchain and cryptocurrency are definitely changing the way we interact with financial services.

Q.6) What challenges do you see for FinTech companies operating in the current regulatory environment?

A: I think one of the biggest challenges for FinTech companies operating in the current regulatory environment is the need to comply with Know Your Customer (KYC) and Anti-Money Laundering (AML) regulations. These regulations are designed to protect consumers from financial fraud and abuse, but they can also be a challenge for FinTech companies that are trying to innovate and offer new and convenient solutions to customers.

Q.7) What advice would you give to someone who is looking to enter the FinTech industry?

A: My advice would be to research the industry thoroughly and try to gain as much knowledge as possible. There are a lot of new and exciting developments happening in the FinTech industry, so it's important to stay up-to-date on the latest trends. Additionally, I would advise anyone looking to enter the FinTech industry to network with as many people as possible. The FinTech industry is still relatively small, so it's important to build relationships with other professionals in the field.

Q.8) What advice would you give to entrepreneurs looking to start a FinTech company?

A: My advice to entrepreneurs looking to start a FinTech company would be to focus on solving a specific problem that customers are facing. There are a lot of FinTech companies out there that are trying to do too many things, and I think it's important to focus on solving a specific problem that you can do well. Also, I think it's important to partner with established financial institutions, because they can provide valuable insights into the industry and help you navigate the regulatory environment.

Q.9) Why is it so important now more than ever to focus on improving financial literacy?

A: The most important thing for FinTech companies to remember as they scale is that they need to maintain a high level of customer service. As you grow, it's important to keep your customers happy by providing them with the same level of service and support that you did when you were a small company. Also, I think it's important to continue to innovate and offer new and convenient solutions to customers. Also, I think it's important to partner with established financial institutions, because they can provide valuable insights into the industry and help you navigate the regulatory environment.

Q.10) What excites you the most in the field of financial technology right now? And how do you anticipate things to play out by 2030?

A: I am most excited about the potential for fintech to further disrupt the traditional financial system. I think we will see even more innovation in the fintech space in the coming years that will continue to make financial services more convenient and accessible for consumers and businesses. I also think we will see more consolidation in the industry as the biggest players continue to get bigger and the smaller players get acquired.

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- Team Nimbus 10.2

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